Sex and Age distribution of Tuberculosis Cases registered in Medak and Hyderabad districts under the Revised National Tuberculosis Control programme (RNTCP).

Consultancy Report

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ANDHRA PRADESH TUBERCULOSIS PROJECT

SEX AND AGE DISTRIBUTION OF TUBERCULOSIS CASES REGISTERED IN MEDAK AND HYDERABAD DISTRICTS UNDER THE REVISED NATIONAL TUBERCULOSIS CONTROL PROGRAMME (RNTCP)

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ABBREVIATIONS

AP	Andhra Pradesh
BCG	Bacille Camette-Guérin
CTD	Central Tuberculosis Division, DGHS
DFIDI	Department for International Development, India
DGHS	Directorate General of Health Services
DTH	Delayed Type Hypersensitivity
NTI	National Tuberculosis Institute, Bangalore
NTP	National Tuberculosis Programme
RNTCP	Revised National Tuberculosis Control Programme
STDC	State Tuberculosis Training and Demonstration Centre
TB	Tuberculosis
TST	Tuberculin Skin Test

EXECUTIVE SUMMARY

Terms of Reference

1. To review the sex and age distribution of new smear positive tuberculosis (TB) cases registered under the Revised National Tuberculosis Control Programme (RNTCP) in Medak and Hyderabad districts and compare the observed age-sex distributions with those in published prevalence and incidence studies of pulmonary TB in India.

2. To suggest how case detection rates among women can be better evaluated using data from routine programme reports.

Main Findings

1. In India and all other high prevalence countries examined, notification rates for smear positive pulmonary TB have been lower among females than males after age 14. These findings do not concur with the experience of industrialised countries in the first half of this century, where rates among females between the ages of 15 and 35 were 10-35% higher than among males. It has therefore been postulated that in high prevalence countries with poorly developed public health services, women are under-diagnosed when compared to men. However, the epidemiology of TB in industrial countries earlier this century with respect to the age-sex distribution of pulmonary TB may be a poor guide to the situation in India today, where patterns of urbanisation, living and social conditions, and work activities are different (Section 1).

2. Cross-sectional and prospective studies carried out in India show lower rates of bacteriologically confirmed pulmonary TB among adult women in all age groups when compared to men. Exceptionally, in the Bangalore rural longitudinal survey (1961-68), an annual incidence rate of approximately 100 per 100,000 was found for both sexes in the 15-34 age group. In the Wardha district prevalence survey (1982), rates were lower for women in all age groups and for all demographic groupings with the exception of some occupational groups that accounted for a small proportion of female cases (Section 2, Appendices 1-3).

3. The age-sex distribution of smear positive TB cases registered under RNTCP in Medak and Hyderabad districts (1995-1998) is broadly similar to RNTCP registrations for all India (1997). Overall, the proportions of smear positive cases that are male in all India, Medak and Hyderabad are 67.6%, 72.0% and 63.5% respectively. In Hyderabad district, when compared to all India, the relative proportion of smear positive cases for both sexes in greater in the age group 15-24 than in the age group 25-35. In Medak district, the relationship is reversed: a greater proportion of cases in both sexes are found in the age group 25-35 than among younger adults, when compared to all India data (Sections 3-5, Appendix 6).

4. In Hyderabad district, the proportion of female cases is higher, and the distribution of case detection rates for both sexes is skewed toward younger adults, when compared to Medak. The age-sex distributions of registered cases observed in Medak and Hyderabad have remained relatively constant over three years and probably reflect true differences in the age-specific incidence of TB, with higher rates among young adults of both sexes in Hyderabad when compared to Medak (Appendix 7).

5. The rapid expansion of private health services in India during the last 50 years (which do not notify reportable diseases) makes it difficult to draw conclusions about overall access to TB services on the basis of figures reported from public facilities. Moreover, variable use of private services across age-sex groups is likely to distort the age-sex pattern of public sector usage.

Recommendations

1. Better use of routinely reported data can be made by following the trends of smear positive case detection rates by sex and age group. This requires obtaining estimates for population denominators for each district. Where appropriate, case detection data within districts should be analysed separately for urban and rural areas.

2. DFIDI should encourage the Central TB Division (CTD) to develop sex and age-group specific incidence estimates for the TB epidemic in India. Currently, the only evaluation of coverage that is routinely carried out by the CTD is to compare the total smear positive case detection rate in a district to the national annual incidence estimate of 85 per 100,000 population.

3. Simple retrospective studies abstracting data from treatment registers and treatment cards on outcome by sex, age, type of facility and type of DOTS provider should be planned as part of regular project monitoring. Such low-cost audits can identify factors associated with poor programme performance that may differ for men and women.

4. The demographic profile of male and female patients using the private network of DOTS providers managed by the Mahavir Trust hospital in Hyderabad should be compared to the profile of patients using treatment centres managed by the State TB Training and Demonstration Centre (STDC). Comparing patients that use public and private services can provide useful information for planning urban services.

5. Retrospective studies based on routinely recorded data of registered patients have inherent limitations. Operational studies using a mix of methodologies can provide direction for improving service delivery strategies. By way of example, the abstracts presented in Annex 1 summarise three linked studies examining gender issues related to beliefs, treatment seeking and treatment adherence in Vietnam. The impact of these studies will be maximised if the involve programme managers and are planned as part of implementation and evaluation.

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1 SEX DIFFERENCES IN THE INCIDENCE OF TB INFECTION AND DISEASE

1.1 Risk of TB infection

Although there are technical problems and immunological considerations that can affect the interpretation of tuberculin skin tests (Rieder, 1995; Fine, 1993), tuberculin surveys carried out in many countries have shown fairly consistent patterns in the age-sex prevalence of TB infection.

Tuberculin prevalence surveys conducted in 15 countries as part of BCG vaccination campaigns between 1948 and 1951 (Nyboe, 1957) and later WHO surveys in Africa (Roelsgaard et al., 1964) showed that the prevalence of tuberculin skin test (TST) positivity is nearly equal in males and females until at least the age of 10 years, and that sometime in early adolescence the prevalence of TST positivity among males exceeds that among females. For both sexes, the prevalence of TST positivity declines in adults over age 50, either because of selective mortality of TST positives or declining test sensitivity with age, or because of a combination of a reversion to negativity and a reduced risk of reinfection in the elderly (Fine, 1993).

In Bangalore, population surveys carried out in 119 randomly selected villages between 1961 and 1968, showed that the prevalence of infection was similar until the age of 14, after which the prevalence increased in males (Gothi et al., 1974). By age 30, the male prevalence was 60% compared to about 30% among females. The prevalence of TST positivity continued to rise with age in males to about 65% at age 50; in females, TST prevalence rises with age to about 50% by age 65.

A similar pattern was found in tuberculin surveys carried out as part of the large BCG trial in Chingleput. In the 20-29 year age group, the prevalence of TST positivity among males was about 70%, whereas among females the prevalence was about 55% (Baily et al., 1980). By age 50, the prevalence among males versus females was 85% and 70% respectively.

Whereas the prevalence of infection appears to have been much higher in the Chingleput population, these differences may in part be due to differences in the antigen used and other methodological differences. The relevant point here is that the age-sex trends were similar in both populations and matched patterns observed in other countries (Holmes et al., 1998).

The differences in the prevalence of TB infection between males and females after adolescence (as measured by TST) has usually been attributed to more frequent contact with infectious cases among older males because of different work and social patterns (Hudelson, 1996). The difference may in part be due, however, to sex differences in the delayed-type hypersensitivity (DTH) immune responses to the tuberculin skin test antigen (Fine, 1993).

1.2 Progression from TB infection to TB disease

Prospective studies that have followed individuals infected with TB (as determined by a positive TST) have consistently shown, in both low-income and high-income settings, that women between the ages of 10 and 40 are more likely than men to progress to active disease. After the age of 40 this trend is reversed and men have higher progression rates than women (Holmes et al., 1998).

In both instances, it is unclear why rates of progression to active disease should be different between sexes. Among older men, it has been postulated that a higher prevalence of alcohol abuse and smoking contribute to higher progression rates (Brown and Campbell, 1961; Lewis and Chamberlain,

1963). In countries with a high TB prevalence, a second reason for a higher progression rate among older men may be a higher rate of re-exposure to infectious cases as compared to women of the same age. Reinfection has a significant impact on TB incidence in high prevalence countries. Among the Inuit of Alaska, Greenland and northern Canada, the decrease in TB incidence after 1950 that followed the decline in the number of infectious cases, also occurred among older persons which had been previously infected (Styblo, 1991). The importance of reinfection in an area of South Africa with a high TB incidence has been demonstrated in a recent paper using DNA fingerprinting to identify TB strains (van Rie, et al., 1999).

Among younger women, it was formerly believed that pregnancy and the postpartum period increased the risk of progression from infection to disease. However, reviews of older studies (Snider, 1984; Hamedah and Glassroth, 1992) and a case-control study comparing the prevalence of pregnancy or childbirth among women with and without TB (Espinal et al, 1996) have shown that there is probably no link between pregnancy and TB.

As previously mentioned, differing DTH immune responses may partly explain the lower prevalence of TST positivity among young women. If this were indeed the case, then higher rates of progression observed among young women could in part or in whole be due to the higher risk of disease among women who manifested a positive TST, rather than a greater susceptibility to disease. In the longitudinal study in Bangalore, where subjects initially screened for TB infection and disease where subsequently screened for TB at set intervals (Olakowski, 1973), it was observed that that among TST positives, the annual incidence of disease was higher in women aged 15-34 than among similarly aged men. However, the TB incidence among all subjects in the 15-34 age group (including both TST-negative and TST-positive subjects) showed the same annual incidence for both sexes, about 100 per 100,000 population. In older age groups, the average incidence was higher for males than females, both among those initially tuberculin positive and those initially tuberculin negative.

1.3 Overall risk of TB disease

Most of the data that indicates higher rates of pulmonary TB disease among young women are from industrial countries in the early half of this century with well developed health services and reporting systems. These data on notified cases show that disease rates were similar for males and females below the age of 15, higher in women from adolescence to the mid-twenties or mid-thirties by 10-35%, and consistently higher in men after the age of 40 (Holmes et al, 1998).

Though the overall notification rate of TB disease in low-income countries today is similar to that found in industrialised countries in the first half of this century, the same pattern in age-sex rates of pulmonary diseases has not been observed, whether in China, South America, African countries or India. In all low-income countries examined, notification rates for smear positive pulmonary TB have been higher in males after the age of 14. This has led to the hypothesis that public health services are under-utilised by women with TB relative to men in developing countries, or that women with TB are under-diagnosed when they do present.

There is evidence of sex differences in the use of health services for other diseases such as malaria and leishmaniasis (Ettling et al., 1989; WHO/TDR, 1996). Other studies indicate that financial and social barriers are greater for women and may result in inadequate care-seeking, and that this can be exacerbated for health conditions that are stigmatised such as TB or sexually transmitted diseases.

However, the fact that the age-sex distribution of reported pulmonary TB in developing countries does not reflect the pattern seen in the industrialised countries in the first half of this century is not in itself secure evidence that women in India are underrepresented among notified cases.

In the first place, the cumulative risk of TB for most women in India today, as in other high prevalence countries, may be quite different from that of women in industrialised Europe in the early part of the century, where patterns of urbanisation, living and social conditions, and work activities were quite different.

Secondly, general studies of the burden of TB disease in low-income countries indicate that a large proportion of infectious pulmonary cases, regardless of sex, are not detected by public health services (Murray, 1993). For India in 1997, the estimated proportion of smear positive cases detected by public services was only 34.0% (WHO, 1999). In the context of low utilisation of public sector services for TB, it is difficult to draw conclusions from reported figures about the relative under-utilisation of services by women or under-diagnosis of TB among females by health workers.

A wide range of private health care services in India today probably account for as many TB treatment episodes as the public sector (Pathania, 1997). The use of available private health services can be expected to vary according to a number of social and demographic variables including place of residence, sex, education and income. Because the relative use of private versus public health services for a particular medical condition may differ by sex or age, one may anticipate that the proportion of TB cases that use public services will not be the same across all age-sex groups.

1.4 Summary: sex differences in the incidence of TB infection and disease

The prevalence of TB infection as determined by tuberculin skin test (TST) surveys in India and in other high TB prevalence countries have shown that the prevalence of TST positivity is similar in males and females until early adolescence, after which prevalence among males exceeds that of females. Sex differences in TST positivity after adolescence have usually been attributed to higher exposure risks among males, but may in part be due to sex differences in immune responses to TSTs.

In both low and high TB prevalence countries, progression to active pulmonary TB among TST positives is more likely among females between the ages of 10 and 40. After the age of 40, progression is more likely among males. Higher rates of alcohol abuse and smoking, as well as a greater risk of reinfection have been postulated as reasons for higher rates among older men. Pregnancy is no longer considered an independent risk factor for disease progression.

Overall disease rates for any age-sex group are determined by the cumulative incidence of exposure and the risk of progression to active TB. The findings of TST surveys in high prevalence countries and prospective studies on disease progression among those with a positive TST would lead one to expect that the overall rate of pulmonary TB would be higher among males in India, with a clear excess among males in older age groups. A priori, the relative rates of pulmonary TB expected among males and females between the ages of 10 and 40 in India is less clear.

In India and all other high prevalence countries examined, notification rates for smear positive pulmonary disease have been lower among females after the age of 14. These findings do not concur with the experience of industrialised countries in the first half of this century, where rates among females between the ages of 15 and 35 were 10-35% higher than among males. It has therefore been postulated that in high TB prevalence countries with poorly developed public health services, women are relatively under-diagnosed as compared to men.

However, the epidemiology of TB in industrial countries earlier this century with respect to the sex distribution of pulmonary TB may be a poor guide to the situation in India today. The rapid expansion of private health services in India during the last 50 years (which do not notify reportable diseases) makes it difficult to draw firm conclusions about overall access to health services on the basis of

figures reported from public facilities. Moreover, variable use of private services across age-sex groups is likely to distort the age-sex pattern of public sector usage.

2 AGE-SEX DIFFERENTIALS IN TB PREVALENCE AND INCIDENCE IN INDIA

2.1 Source for published data

An extensive review of the available data was summarised in 1996 for the South East Asia Regional Office of the WHO (Chakraborty, 1997). This comprehensive survey of published and unpublished studies confirms that TB is still a major cause of morbidity and mortality throughout the country. For pulmonary TB, a majority of cases occur in males, perhaps two out of three. Whereas approximately 50% of prevalent cases occur in adults 40 years of age and over, almost as many are found in young adults between 20 and 40. Among women, 50% of pulmonary TB cases occur in the reproductive age group.

The problem of comparing studies carried out over several decades in different parts of India and using different methodologies is a recurrent theme in Chakraborty's review. In order to reconcile conflicting data, certain estimates are recalculated by Chakraborty. Most of the data summarised are not presented separately by sex. However, data on a number of studies reviewed include age-sex data and some of these findings are presented in the following sections.

2.2 Data from the Chingleput BCG trial

The prevalence survey for the BCG trial was done in 1968 as part of the house-to-house census survey in Chingleput district of Tamil Nadu (Baily et al., 1980). The prevalence of bacteriologically confirmed cases was lower among women in each five-year age group. The definition of culture positive was positivity on two specimens taken from subjects with an abnormal miniature chest X-ray.

Of all culture positive cases, 79% were in males. Among men with confirmed pulmonary disease, 70% were in the age group 20-54 years, comprising 39% of the male population. Among female culture positive cases, about 56% of cases were in the reproductive age group from 20-44 years, comprising 40% of the total female population. Appendix 1a and 1b shows the distribution of culture positive cases by age and sex as reported in the study[1]. To facilitate comparison, the data are presented by the age groups used by the RNTCP to report smear positive disease in Appendix 1c.

It should be noted that the figures represent prevalent cases of culture positive TB according to a particular case definition, and should not be viewed as the expected pattern for smear positive case detection. The relationship between incidence and prevalence is likely to vary by age-sex groups, as will case detection ratios. Thus the age-sex distribution of TB found in a prevalence survey, while a reflection of the actual burden of TB disease at the time and place of the survey, is only indicative of the age-sex distribution of newly detected cases under a fictitious scenario of 100% case detection at a point in time.

2.3 Data from the Wardha study

[1] Figures are taken from Chakraborty, 1997.

In this house-to-house survey carried out in Wardha district of Maharashtra in 1982, TB suspects were identified by chest symptom screening (Nayer et al., 1989). Two sputum specimens were collected from chest symptomatics over the age of 5 years. This was the only TB prevalence study carried out in India specifically designed to determine the associations between TB prevalence rates and socio-economic characteristics. Place of residence (urban or rural), type of dwelling, education, occupation and income strata were examined.

The overall prevalence of culture positive TB, including rural and urban areas, was 1.8 times higher in males (239 per 100,000) than females (132 per 100,000). Prevalence rates increased with age in males, the highest prevalence rates occurring in the age groups 55-59 and 60 years and over. Among females prevalence rates increased with age until the 35-39 age group, falling off after the 50-54 age group.

Of the total cases among women, about 48% were among those unemployed, which includes housewives[2]. About 24% and 15% of female cases were classed as "agricultural labourers" and "cultivators" respectively. For all demographic variables examined, rates in females were less than those in males, with the exception of three occupational groups: urban "cultivators" (680 per 100,000), urban "professionals" (849 per 100,000) including small shop keepers, and rural "service" workers (520 per 100,000). The latter two groups – urban professionals and rural services workers – represented a low proportion of the female population in this survey and consequently accounted for a small proportion of the total cases among females.

Appendix 2 shows the prevalence of culture positive TB by sex and occupational groups for urban and rural populations as found in the Wardha census survey.

A recent prevalence study of smear- or culture positive TB carried out in two rural tahsils of Wardha district to compare rates among tribal and non-tribal populations found a successive increase in prevalence rates by age for both sexes in the non-tribal populations, with a 1.5 fold excess in males among the 93.7 thousand non-tribals surveyed. The age sex distribution among the 20.6 thousand tribals surveyed showed a 2.4 fold excess in males (Narang et al., 1999).

2.4 Data from the Bangalore Longitudinal Survey

In this house-to-house survey initiated in 1961 in three sub-districts of Bangalore, all subjects were tuberculin tested and those over the age of 5 were screened by miniature X-ray (Olakowski, 1973; Gothi et al., 1974). Subjects were periodically screened for active TB over a 5-year period. The study was therefore able to estimate TB incidence rates.

The annual incidence of culture positive cases between different surveys in the population over age 5 ranged from 80 to 136 per 100,000. The annual incidence of culture positive cases decreased over time (i.e., between the four surveys) for both males and females among those in age groups 5-14 and 15-34 at the start of the survey. In the age group 35-54, the annual incidence rate among males increased over time from 200 to 300 per 100,000 but remained relatively stable among females at 100 per 100,000. In women aged 55 and over at the start of the study, there was a slight increase in annual incidence between successive surveys (from less than 150 per 100,000 to about 200 per 100,000). Among men aged 55 and over at the start of the survey, the annual incidence between successive surveys ranged from 400 to 700 per 100,000.

[2] Chakraborty, 1997. It is not clear whether the figure of 48% is in error or includes other groups besides the class of "non-workers" as shown in Appendix 2 of this consultancy report. Based on the age-sex ratio in the population, age-sex TB rates and the total population proportion of "non-workers" shown in the table, the class of "non-workers" would account for about 26% (rather than 48%) of female cases.

Over 5 years of observation the average annual incidence rate of TB in women was similar at about 100 per 100,000 for the age groups 15-34 and 35-54 and 55 and over. For men, the average incidence rate was about 100 per 100,000 for the age group 15-34, about 200 per 100,000 for the age group 35-54 and about 600 per 100,000 for those aged 55 and over. About half of all incident cases during the period of follow-up occurred in men aged 35 years and over. These data are shown in Appendix 3.

2.5 Summary: Sex and age differentials in TB prevalence and incidence in India

Cross-sectional and prospective studies carried out in India show lower rates of bacteriologically confirmed pulmonary TB among adult women in all age groups. Exceptionally, in the Bangalore rural longitudinal survey (1961-68), an annual incidence rate of approximately 100 per 100,000 was found for both sexes in the 15-34 age group. In the Wardha district prevalence survey (1982), rates were lower for women in all age groups and for all demographic groupings with the exception of some occupational groups that accounted for a small proportion of female cases.

3 MEDAK DISTRICT: AGE-SEX DISTRIBUTION OF REGISTERED CASES

3.1 RNTCP reporting and NTP registrations in Medak district

In order to reduce reporting requirements to the minimum needed to monitor overall programme performance, routine quarterly case registration reports under RNTCP provide limited age and sex information. For smear positive relapses cases, smear-negative pulmonary cases and extrapulmonary cases, only the total number of registered patients is reported by sex. For new smear positive pulmonary cases sex is reported by seven age categories: 0-14, 15-24, 25-34, 35-44, 45-54, 55-64, and 65 and above. These reporting requirements conform with those recommended globally by the WHO.

Before the introduction of RNTCP, routine NTP reports classified patients as smear positive but did not categorise patients by age group or sex. Patients not started on an RNTCP regimen in Medak district were registered as NTP patients through 1998 and reported on separate forms. In the one-year period from the 2nd quarter of 1997 to the 1st quarter of 1998, 47% of all patients and 38% of new smear positive patients were registered under NTP. The distributions by age and sex described in the following sections exclude those patients registered under NTP.

3.2 Sex distribution of all new cases

Overall, among the 5,237 cases registered under RNTCP during the first 11 quarters of implementation (1996-Q1 through 1998-Q4), 68.4% were male. Among new smear positive pulmonary cases (45% of all new cases) and among smear-negative pulmonary cases (50% of all new cases), the proportion of males has been consistent since the implementation of RNTCP averaging 72.0% and 67.0% respectively. Among the much smaller group of extra-pulmonary cases (5% of new cases), 50.9% have been male. These data are shown in Appendix 4a.

3.3 Age-sex distribution of new smear positive cases

Except for the small number of cases under age 15, male registrations exceeded those among females in all age groups. Between the ages of 15 and 44, males registrations accounted for 66-68% of cases. In older age groups, the proportion of male registrations successively increased. These data are shown in Appendix 4b. Appendix 4c, shows the proportion of males among reported cases by age group for each year from 1996-98, ranging from 60-90% above the age of 15.

Appendix 4d presents the age group distribution of all new smear positive cases by sex, and Appendix 4e shows the age group distribution as a percentage of total registrations for each sex. The age group 15-44 accounts for 60% of male registrations and almost 75% of female registrations. Among females, the age group 25-34 accounted for 31% of registrations, followed by 24% for the women aged 35-44.

Appendix 4f shows the distribution of cases by age group as an annual population rate per 100,000. This table and graph were obtained by applying the 1991 census age-sex distribution of the rural population in India to the 1997 population of Medak, estimated as 25.63 lakh. Though the denominator population used to generate the data in Appendix 4f are based on the national census rather than estimates for Medak district, large differences are not expected.

Age-specific case detection rates per 100,000 population, as opposed to case numbers, allow comparison with prevalence and incidence surveys and are a better basis for estimating the proportion of expected cases that are using public sector services. The annual smear positive case detection rates – only 46 per lakh for males and 19 per lakh for females – are well below expected.

Consistent with the prevalence data from Chingleput, the incidence data from Bangalore (see Section 2), and other India data, notification rates are higher among males in each age group and increase with age. The male:female ratio rises steadily from 1.8 (age group 15-24) to 6.1 (age group 65 and over). The highest rates among males are in the age group 55-64; according to the data reviewed in Section 2, one would expect the rate among males over 65 to be the highest. While the general age group distribution of rates for males are those that might be expected (with the exception of the 65 and over age group), the absolute rates are lower than expected.

Among females, similar rates are observed in women aged 25-34 and 35-44, with rates falling in older age groups. One might expect rates among females ages 45-54 to be similar or higher than rates among younger adult women. As for males, absolute rates for females are low in all age groups.

4 HYDERABAD DISTRICT: AGE-SEX DISTRIBUTION OF REGISTERED CASES

4.1 RNTCP reporting and NTP registrations in Hyderabad district

As for Medak district, the distributions by age and sex described in the following sections exclude those patients registered under NTP where routine reports do not categorise patients by age group or sex. In Hyderabad district, the RNTCP was introduced into a limited number of treatment centres in the city covering an estimated 10 lakh population until September 1998. In the last quarter of 1998, RNTCP was implemented in the other treatment centres under the management of the State TB Training and Demonstration Centre (STDC).

In the one-year period from the 2nd quarter of 1997 to the 1st quarter of 1998, 77% of all patients and 76% of new smear positive patients in Hyderabad district (1997 population estimate of 37.07 lakh) were registered under NTP. Thus, the figures presented in this section represent a minority of TB patients treated in STDC treatment centres in Hyderabad district. However, at the STDC facilities in

which RNTCP was implemented, the majority of patients residing in the RNTCP catchment area were started on RNTCP regimens.

4.2 Sex distribution of all new cases

Overall, among the 3,841 RNTCP cases registered over the 14 quarters since the introduction of RNTCP, 56.6% have been male. Among new smear positive pulmonary cases (49% of all new cases) the proportion of males is 63.5%. Among smear-negative pulmonary cases (30% of all new cases), the proportion of males is 59.8%. Among extra-pulmonary cases including gland TB (17% of all new cases) only 36.0% have been male. The proportion of male patients among new cases by type of TB for Hyderabad district is shown in Appendix 5a.

4.3 Age-sex distribution of new smear positive cases

As in Medak district, smear positive registrations in Hyderabad district among males exceeded those among females in all age groups after the age of 15. However, among young adults in the age group 15-24, female registrations were almost equal to male registrations. In older age groups, the proportion of male registrations successively increased, reaching 85% among those aged 65 years and more. These data are shown in tabular form for each quarter Appendix 5b and presented graphically for each year in Appendix 5c.

In Appendix 5d are shown the total number of cases by age group and sex for the period. The distribution by age group as a percentage of total registrations for each sex are shown in Appendix 5e. This distribution is more skewed towards younger women than in Medak. The age group accounting for the largest number of cases among females are very young adults between the ages of 15 and 24 (44%). Almost three quarters of female registrations (72%) are among women aged 15 to 34.

Appendix 5f shows the distribution of cases by age group as an annual population rate per 100,000. This table and graph were obtained by applying the 1991 census distribution among the urban population in India and selecting 10 lakh as the denominator population (the estimated catchment population for the RNTCP in Hyderabad during the period examined). As already stated in relation to Medak district, age-specific incidence rates allow comparison with historical data and are a better basis for estimating the proportion of expected cases that are using public sector services than age-sex distribution of case numbers.[3]

Among males, the highest notification rate is in the 25-34 age group with a general downward trend in older males. Comparatively high rates are also observed in the 15-24 age group.

Among females, the highest rates are found in women aged 15-24. The rate in this age group is almost the same as the rate among males of the same age. In older age groups, the male:female sex ratio rises steadily from 1.6 (age group 25-34) to 5.6 (age group 65 and over).

[3] The reader is reminded that some smear positive cases detected in Hyderabad within the 10 lakh catchment population for RNTCP and are thus excluded from RNTCP case registration figures. It is the author's understanding that the proportion of cases registered is much smaller than for Medak district and can probably be ignored when looking at age-sex trends among notified cases.

5 MEDAK AND HYDERABAD DISTRICTS: COMPARISON OF AGE-SEX DISTRIBUTIONS WITH ALL INDIA DATA AND BETWEEN DISTRICTS

5.1 Medak and Hyderabad age-sex distributions compared with all India data

Appendix 6 compares the age-sex distribution of smear positive TB cases registered under RNTCP across India in 1997 with the age-sex distribution of cumulative RNTCP cases in Medak and Hyderabad district through the end of 1998. The graphs show that broadly speaking the age-sex distributions are similar. Overall, the proportion of smear positive cases that are male for India, Medak and Hyderabad are 67.6%, 72.0% and 63.5% respectively. In Hyderabad district, when compared to all India, the relative proportion of cases for both sexes in greater in the age group 15-24 than in the age group 25-35. In Medak district, the relationship is reversed: a greater proportion of cases in both sexes are found in the age group 25-35 than among younger adults, when compared to all India figures

5.2 Age-sex distributions in Medak district compared to Hyderabad district

The distinct differences in the distribution of cases by age group between Medak and Hyderabad are illustrated in Appendices 7a and 7b, which show the best estimate of annual case detection rates per 100,000 population by age group for males and females respectively.

Both the higher proportion of female cases in Hyderabad compared to Medak, as well as the fact that the distribution for both sexes in Hyderabad is skewed toward younger adults can have several explanations. Some of the differences may be artefact, namely the case detection rates are inaccurate because the age-sex distribution of the populations in Hyderabad and Medak are different than the 1991 census of India age-sex distributions for urban and rural areas that were used to produce the tables and graphs. It is more likely that the population distribution in 10 lakh catchment area in Hyderabad differs from the 1991 census of India distribution for urban areas. However, any differences in the age-sex distribution of the real population versus the all India census data are probably not sufficient to account for the observed differences in the age-sex case detection rates between Hyderabad and Medak.

Another explanation could be that the proportion of true cases that use and are diagnosed at public sector facilities is age and sex specific, and that this will differ between rural and urban populations. In this case, the distribution of registered cases is a distortion of the true distribution among the population. This almost certainly plays some role, explaining for instance why the case detection rate among males over 65 are lower than among younger adults, when the data reviewed in Section 2 suggest that they should be higher.

Without examining in greater detail the current demographic projections for both districts or carrying out similar analyses of reported rates in other rural and urban districts in India, it is difficult to estimate the importance of the above factors. Notwithstanding these cautionary remarks, the age-sex distributions of registered cases observed in Medak and Hyderabad districts have remained relatively constant over 3 years (Appendices 4a-c and 5a-c). It may therefore be concluded that the true age specific incidence of TB in the Hyderabad population under study is different from that in Medak, with higher rates among young adults of both sexes.

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ANNEX 1: EXAMPLES OF OPERATIONAL RESEARCH ON GENDER DIFFERENCES IN TREATMENT DELAY, ATTITUDES TO COMPLIANCE AND BELIEFS ABOUT TB

A1.1 Longer delays in TB diagnosis among women in Vietnam.

Long NH, Johansson E, Lonnroth K, Eriksson B, Winkvist A, Diwan VK

Int J Tuberc Lung Dis 1999 May;3(5):388-93

National Institute of Tuberculosis and Respiratory Diseases, Hanoi, Vietnam.

SETTING:

Study conducted in 23 randomly selected districts in four provinces of Vietnam.

OBJECTIVE:

To describe and compare health seeking behaviour between men and women and to measure delays in tuberculosis (TB) diagnosis.

DESIGN:

All patients (n = 1027) aged 15-49 years with new smear positive pulmonary TB detected in the selected districts during 1996 were interviewed using a structured questionnaire.

RESULTS:

Mean total delay to TB diagnosis was 13.3 weeks (95% confidence interval [CI] 11.5, 15.1) for women and 11.4 weeks (95% CI 10.6, 12.2) for men, including a patient's delay of 7.9 weeks (95% CI 6.5, 9.3) and 7.6 weeks (95% CI 6.9, 8.3) respectively. Doctor's delay was significantly longer among women (5.4 weeks, 95% CI 4.2, 6.6) than among men (3.8 weeks, 95% CI 3.3, 4.3). Women did not start seeking care later than men, nor did they have a different health seeking pattern. Women visited more health care providers than men (1.7 and 1.5 providers, respectively, P = 0.02).

CONCLUSION:

Patient's delay is unacceptably long for both men and women. Women do not receive a diagnosis of TB by doctors or other health care providers as quickly as men once they seek health care. The reasons for this gender difference warrant further investigations.

A1.2 Attitudes to compliance with TB treatment among women & men in Vietnam.

Johansson E, Long NH, Diwan VK, Winkvist A

Int J Tuberc Lung Dis 1999 Oct;3(10):862-8

Department of Public Health Sciences, Karolinska Institute, Stockholm, Sweden.
eva.johansson@phs.ki.se

SETTING:

A study carried out in 1996 in four districts representing south and north as well as urban and rural areas of Vietnam.

OBJECTIVE:

To explore gender differences in knowledge, beliefs and attitudes towards tuberculosis and its treatment, and how these factors influence patients' compliance with treatment.

DESIGN:

Sixteen focus group discussions were performed by a multi-disciplinary research team from Vietnam and Sweden. Analysis was performed using modified Grounded Theory technique, specifically evaluating gender differences.

RESULTS:

Women were believed to be more compliant than men. Insufficient knowledge and individual cost during treatment were reported as main obstacles to compliance among men (poor patient compliance), while sensitivity to interaction with health staff and stigma in society (poor health staff and system compliance) were reported as the main obstacles among women.

CONCLUSIONS:

It is time to adopt a more comprehensive and gender-sensitive approach to compliance, which incorporates patient compliance, doctor compliance and system compliance, in order to fully support individual patients in their efforts to comply with treatment.

A1.3 Different TB in men and women: beliefs from focus groups in Vietnam.

Long NH, Johansson E, Diwan VK, Winkvist A

Soc Sci Med 1999 Sep;49(6):815-22

National Institute of Tuberculosis and Respiratory Diseases, Hanoi, Viet Nam.

After decades in decline, tuberculosis (TB) has been increasing worldwide. In 1993, the World Health Organisation declared TB a global emergency. Passive case-finding is an important part of TB control programmes, and this is strongly affected by people's perceptions and beliefs of TB and society's behaviour towards TB sufferers.

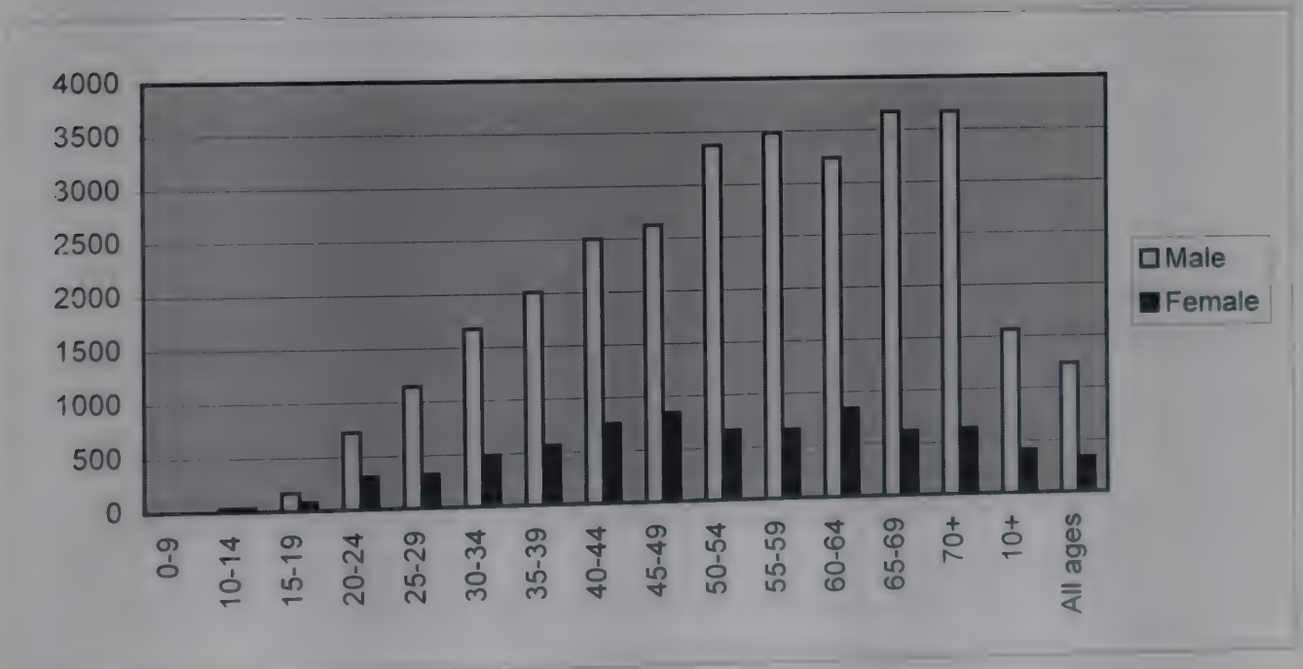
The aim of this study was to describe the perceptions and beliefs of Vietnamese people regarding TB and its risk factors with special reference to differences between men and women. Sixteen focus group discussions (FGDs) were organised in four districts representing different regions in Vietnam and consisting of men and women, TB patients and non-TB participants.

In general, participants had good knowledge of TB being a dangerous, contagious and infectious disease, caused by germs. However, traditional beliefs in different types of TB still exist, mainly among older people in rural areas, but also resorted to by other people once ill.

Four main types of TB were reported: (1) "Lao truyen" (hereditary TB), handed down from older generations to latter ones through "family blood", regardless of sexes; (2) "Lao luc" (physical TB), caused by hard work, more men affected; (3) "Lao tam" (mental TB), caused by too much worrying-more women affected; and (4) "Lao phoi" (lung TB), dangerous and caused by TB germs, transmitted through the respiratory system-more men affected. Other general risk factors were also mentioned. Men were perceived to get TB more often than women, as they were more exposed to risk factors during both work and leisure time. These traditional beliefs may contribute to long delays to TB diagnosis and increased social stigma and isolation of TB patients and their families due to erroneous beliefs in transmission routes. Our findings demonstrate areas where TB control programmes may be improved.

CHINGLEPUT BCG TRIAL, 1968
PREVALENCE OF CULTURE POSITIVE TB BY AGE & SEX, PER 100,000

Age Group	Population (reported)			Prevalence rate (reported)	
	Male	Female	Total	Male	Female
0-9	27789	24893	52682	not tested	not tested
10-14	19437	17412	36849	36	35
15-19	11272	10170	21442	169	79
20-24	10408	11654	22062	720	309
25-29	10607	12505	23112	1141	320
30-34	9588	10300	19888	1669	476
35-39	9017	9576	18593	2007	564
40-44	7357	7865	15222	2501	754
45-49	7253	7134	14387	2620	841
50-54	5695	5609	11304	3371	660
55-59	4657	4434	9091	3479	654
60-64	3617	2981	6598	3235	839
65-69	2455	1964	4419	3667	611
70+	2265	1436	3701	3663	627
10+	103629	102980	206609	1560	412
All ages	131417	127933	259350	1230	331
10+ (by addition)	103628	103040	206668		

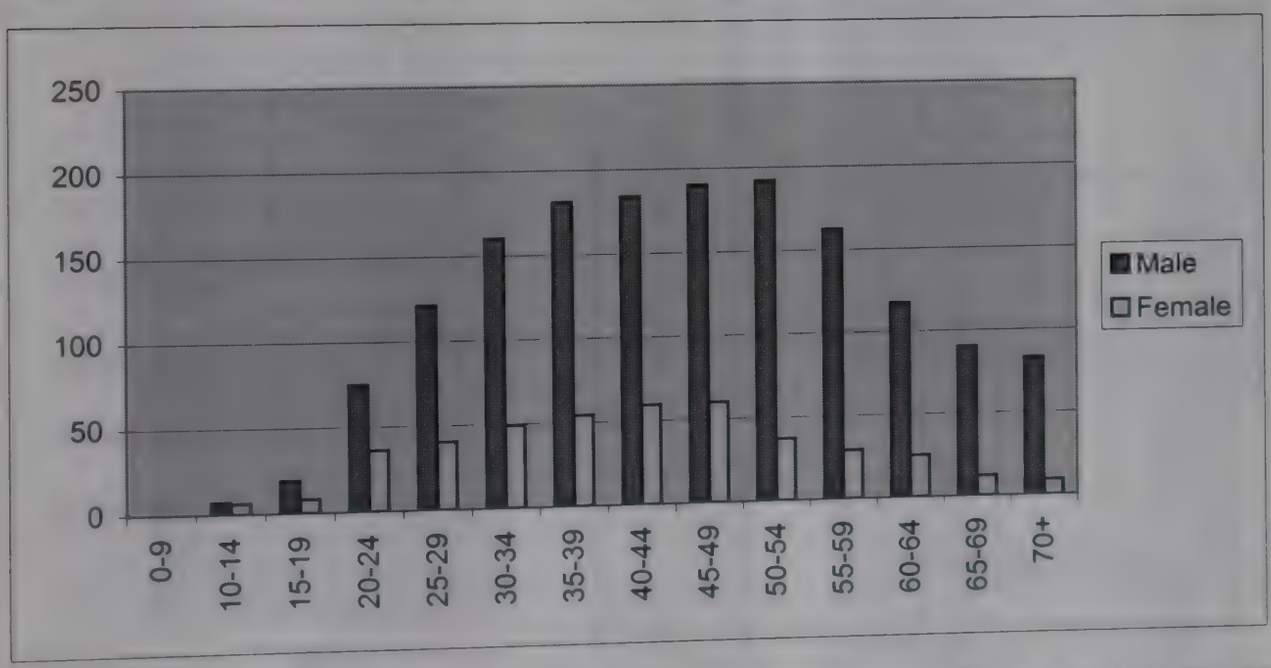


grey boxes in table indicate estimates calculated from reported figures

Source: Chakraborty, 1997, Table 11.

PPENDIX 1B

CHINGLEPUT BCG TRIAL, 1968 PREVALENT CASES OF CULTURE POSITIVE TB BY AGE AND SEX			
Age Group	Cases (estimated)		
	Male	Female	Total
0-9	0	0	0
10-14	7	6	13
15-19	19	8	27
20-24	75	36	111
25-29	121	40	161
30-34	160	49	209
35-39	181	54	235
40-44	184	59	243
45-49	190	60	250
50-54	192	37	229
55-59	162	29	191
60-64	117	25	142
65-69	90	12	102
70+	83	9	92
10+ (as reported)	1617	424	2041
All ages	1617	424	2041
10+ (by addition)	1581	425	2006



grey boxes indicate estimates; smear positive TB is rare under age 10

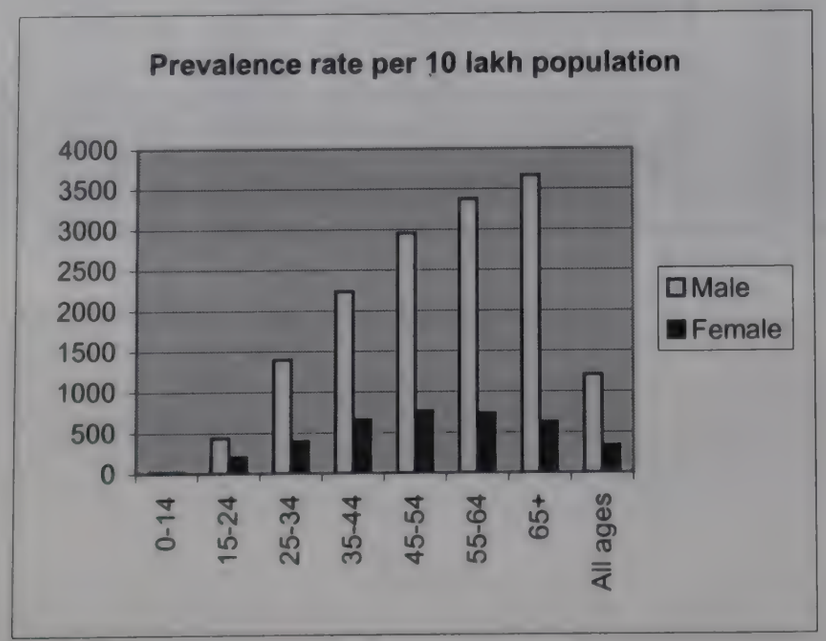
Source: Chakraborty, 1997, Table 11.

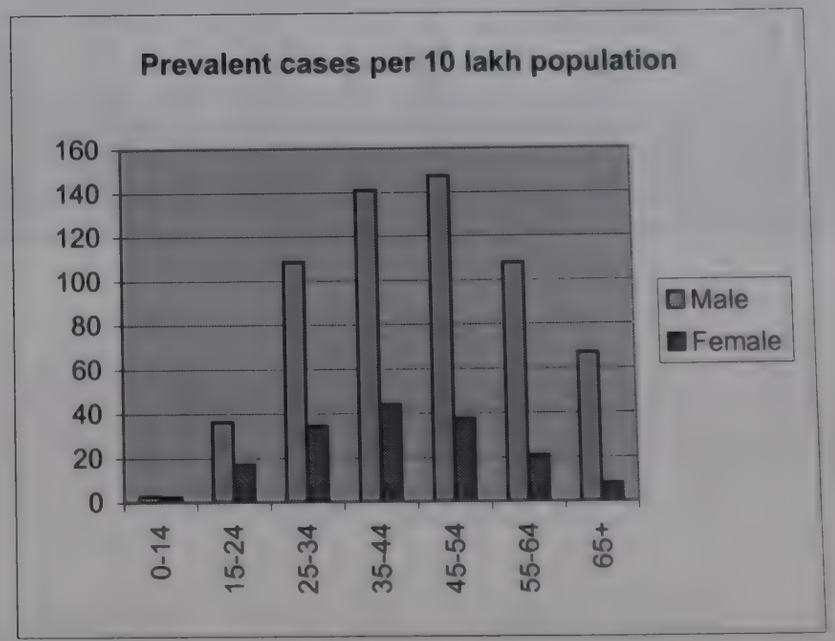
APPENDIX 1C

CHINGLEPUT BCG TRIAL PREVALENCE SURVEY, 1968
PREVALENCE OF CULTURE POSITIVE TUBERCULOSIS BY STANDARD AGE GROUPS AND SEX

Age Group	Prevalence rate per 100,000				Age Group	Prevalent cases per 100,000		
	Male	Female	Both sexes			Male	Female	Both sexes
0-14	15	14	15		0-14	3	2	5
15-24	434	202	317		15-24	36	17	53
25-34	1392	390	861		25-34	108	34	143
35-44	2229	650	1414		35-44	141	44	184
45-54	2950	761	1865		45-54	147	37	185
55-64	3372	728	2123		55-64	108	21	128
65+	3665	618	2389		65+	67	8	75
All ages	1203	332	773		All ages	610	164	773

Source: Prevalence rates and cases recalculated from Table 11, Chakraborty, 1997.
Figures differ slightly from Appendix 1a because of apparent discrepancies in reported rates and populations.





APPENDIX 2

WARDHA CENSUS SURVEY, 1982
PREVALENCE OF CULTURE POSITIVE PULMONARY TUBERCULOSIS BY OCCUPATION, PER 100,000 POPULATION

	Urban and rural				Urban				Rural			
Occupation	Population proportion	Total population	Sex Ratio (M/F)	Proportion of total cases	Male	Female	Total	Sex Ratio (M/F)	Male	Female	Total	Sex Ratio (M/F)
Non-worker	26.8%	184,361	0.34	24.9%	313	136	176	2.30	222	157	173	1.41
Student	29.0%	199,415	1.25	6.6%	48	41	45	1.17	50	32	42	1.56
Service	5.3%	36,707	not available	not available	165	118	161	1.40	275	520	296	0.53
Professional	2.0%	13,886	12.19	4.4%	340	849	373	0.40	491	---	448	---
Cultivator	15.0%	102,766	2.45	24.8%	325	680	405	0.48	350	202	306	1.73
Agri-labour	16.4%	112,665	0.85	21.4%	256	114	181	2.25	337	174	249	1.94
Non Agri-labour	3.9%	26,946	not available	not available	460	109	396	4.22	451	220	399	2.05
Others	1.5%	10,586	not available	not available	386	253	364	1.53	702	245	642	2.87
Total	100.0%	687,401	1.08	100.0%	205	116	162	1.77	254	138	198	1.84

Source: Chakraborty, 1997, Table 12 and Appendix Table iv

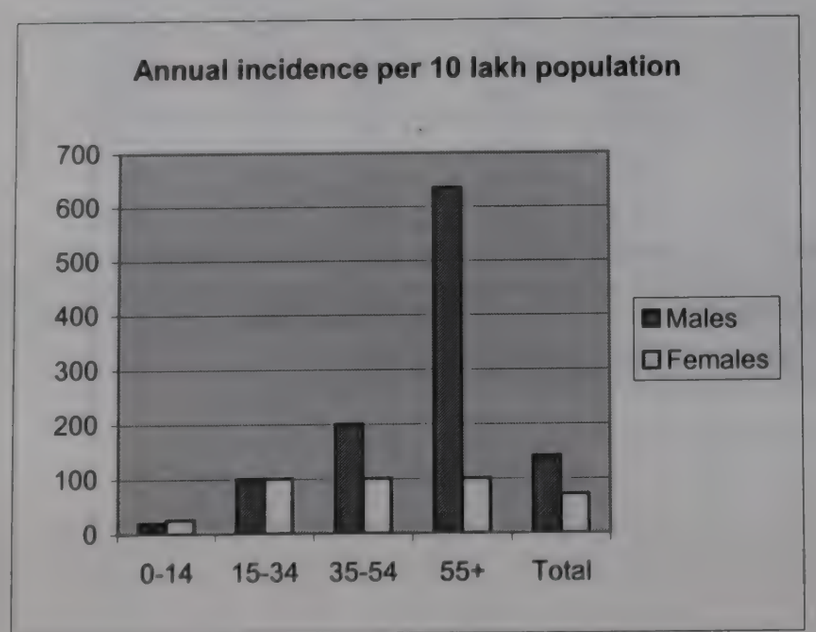
APPENDIX 3

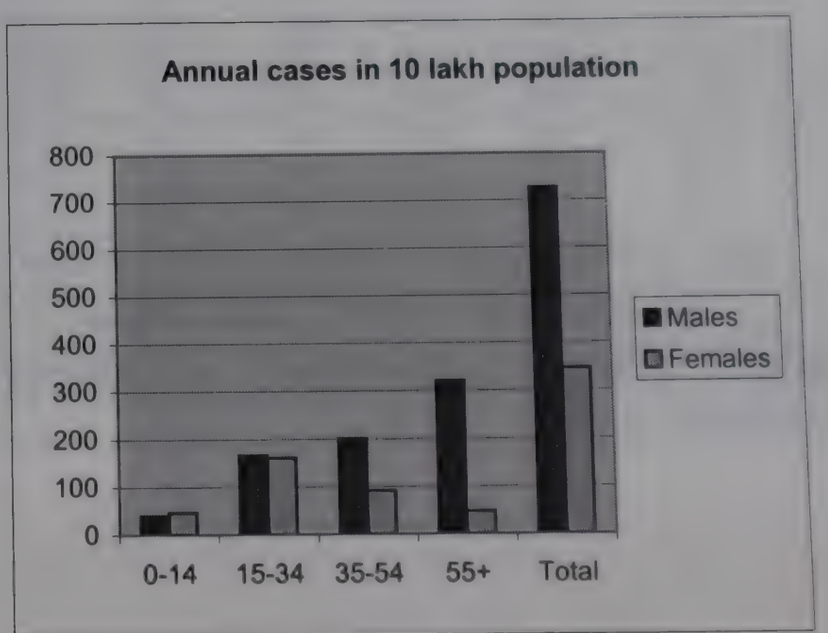
BANGALORE RURAL LONGITUDINAL SURVEY DATA (1961-68)
AVERAGE ANNUAL INCIDENCE OF CULTURE-POSITIVE TUBERCULOSIS BY AGE COHORT AND SEX

Age Group	Incidence rates (per 100,000)		
	Both Sexes	Males	Females
0-14	22	20	25
15-34	100	100	100
35-54	152	200	100
55+	376	635	100
Total	107	141	71

Age Group	Cases (per 100,000 population)		
	Both Sexes	Males	Females
0-14	86	40	46
15-34	326	166	160
35-54	292	200	91
55+	367	320	47
Total	1071	726	345

Source: Incidence rates estimated from Figure 11 in Chakraborty, 1997.
Cases calculated by applying 1991 Indian Census data for age sex distribution of rural population





MEDAK DISTRICT, 1996-98

RNTCP REGISTRATIONS OF NEW TUBERCULOSIS CASES BY TYPE OF DISEASE AND SEX

Quarter	Smear-positive			Smear-negative			Extra-pulmonary			All new cases			
	Male	Female	% Male	Male	Female	% Male	Male	Female	% Male	Male	Female	Total	% Male
1996-Q2	223	72	76%	64	32	67%	7	11	39%	294	115	409	72%
1996-Q3	171	69	71%	211	91	70%	9	10	47%	391	170	561	70%
1996-Q4	188	63	75%	88	32	73%	2	1	67%	278	96	374	74%
1997-Q1	137	49	74%	28	13	68%	4	1	80%	169	63	232	73%
1997-Q2	144	62	70%	39	20	66%	3	3	50%	186	85	271	69%
1997-Q3	183	79	70%	249	98	72%	12	8	60%	444	185	629	71%
1997-Q4	151	65	70%	217	108	67%	18	11	62%	386	184	570	68%
1998-Q1	106	41	72%	170	108	61%	11	21	34%	287	170	457	63%
1998-Q2	132	53	71%	214	135	61%	27	26	51%	373	214	587	64%
1998-Q3	116	50	70%	199	98	67%	15	23	39%	330	171	501	66%
1998-Q4	130	52	71%	281	131	68%	32	20	62%	443	203	646	69%
1996-98 (96Q2-98Q4)	1,681	655	72.0%	1,760	866	67.0%	140	135	50.9%	3,581	1,656	5,237	68.4%

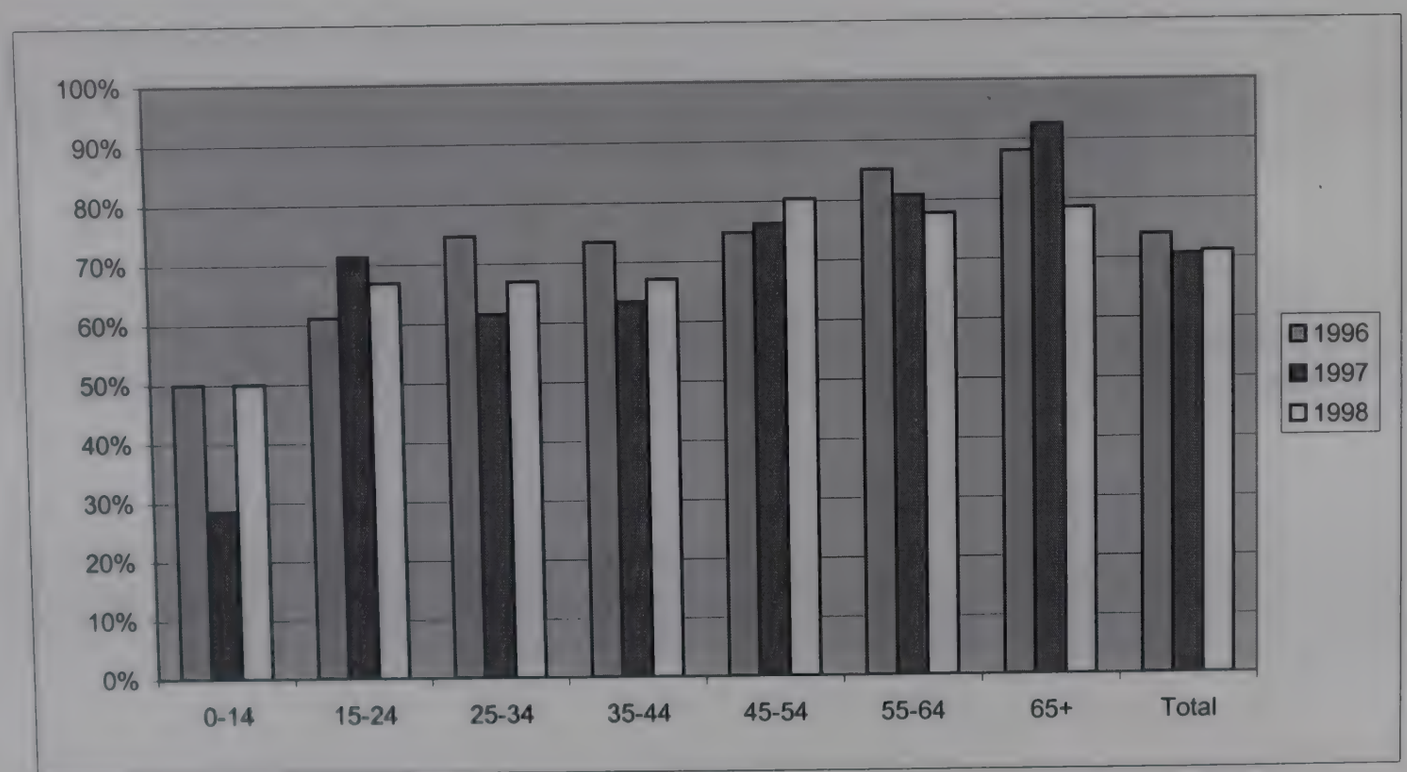
MEDAK DISTRICT, 1996-98

RNTCP REGISTRATIONS OF NEW SMEAR-POSITIVE TUBERCULOSIS CASES BY AGE AND SEX

Quarter	0-14			15-24			25-34			35-44			45-54			55-64			65 & above			All new smear-positives			
	M	F	% M	M	F	% M	M	F	% M	M	F	% M	M	F	% M	M	F	% M	M	F	% M	M	F	Total	% M
1996-Q2	1	2	33%	31	21	60%	63	25	72%	51	12	81%	37	5	88%	26	5	84%	14	2	88%	223	72	295	76%
1996-Q3	2	2	50%	27	15	64%	45	16	74%	36	19	65%	33	16	67%	24	1	96%	4	0	100%	171	69	240	71%
1996-Q4	1	0	100%	16	11	59%	60	16	79%	43	16	73%	19	9	68%	30	8	79%	19	3	86%	188	63	251	75%
1997-Q1	0	0		17	7	71%	36	18	67%	30	7	81%	27	8	77%	17	8	68%	10	1	91%	137	49	186	74%
1997-Q2	1	1	50%	16	5	76%	33	23	59%	25	18	58%	26	9	74%	34	6	85%	9	0	100%	144	62	206	70%
1997-Q3	0	2	0%	23	13	64%	40	25	62%	36	20	64%	35	10	78%	34	8	81%	15	1	94%	183	79	262	70%
1997-Q4	1	2	33%	24	7	77%	29	20	59%	20	19	51%	28	9	76%	33	6	85%	16	2	89%	151	65	216	70%
1998-Q1	0	1	0%	14	10	58%	32	11	74%	21	12	64%	17	6	74%	12	1	92%	10	0	100%	106	41	147	72%
1998-Q2	2	1	67%	14	13	52%	27	15	64%	26	12	68%	26	3	90%	26	5	84%	11	4	73%	132	53	185	71%
1998-Q3	1	1	50%	23	7	77%	25	15	63%	20	8	71%	32	9	78%	10	6	63%	5	4	56%	116	50	166	70%
1998-Q4	0	0		24	7	77%	42	21	67%	23	12	66%	19	5	79%	15	6	71%	7	1	88%	130	52	182	71%
1996-98 (96Q2-98Q4)	9	12	43%	229	116	66%	432	205	68%	331	155	68%	299	89	77%	261	60	81%	120	18	87%	1,681	655	2,336	72.0%

MEDAK DISTRICT, 1996-Q2 to 1998-Q4
RNTCP: PROPORTION OF MALE AMONG NEW SMEAR-POSITIVES BY AGE

	0-14	15-24	25-34	35-44	45-54	55-64	65+	Total
1996	50%	61%	75%	73%	75%	85%	88%	74%
1997	29%	71%	62%	63%	76%	81%	93%	71%
1998	50%	67%	67%	67%	80%	78%	79%	71%



MEDAK DISTRICT, 1996-Q2 to 1998-Q4
RNTCP: NEW SMEAR-POSITIVE CASES BY AGE AND SEX

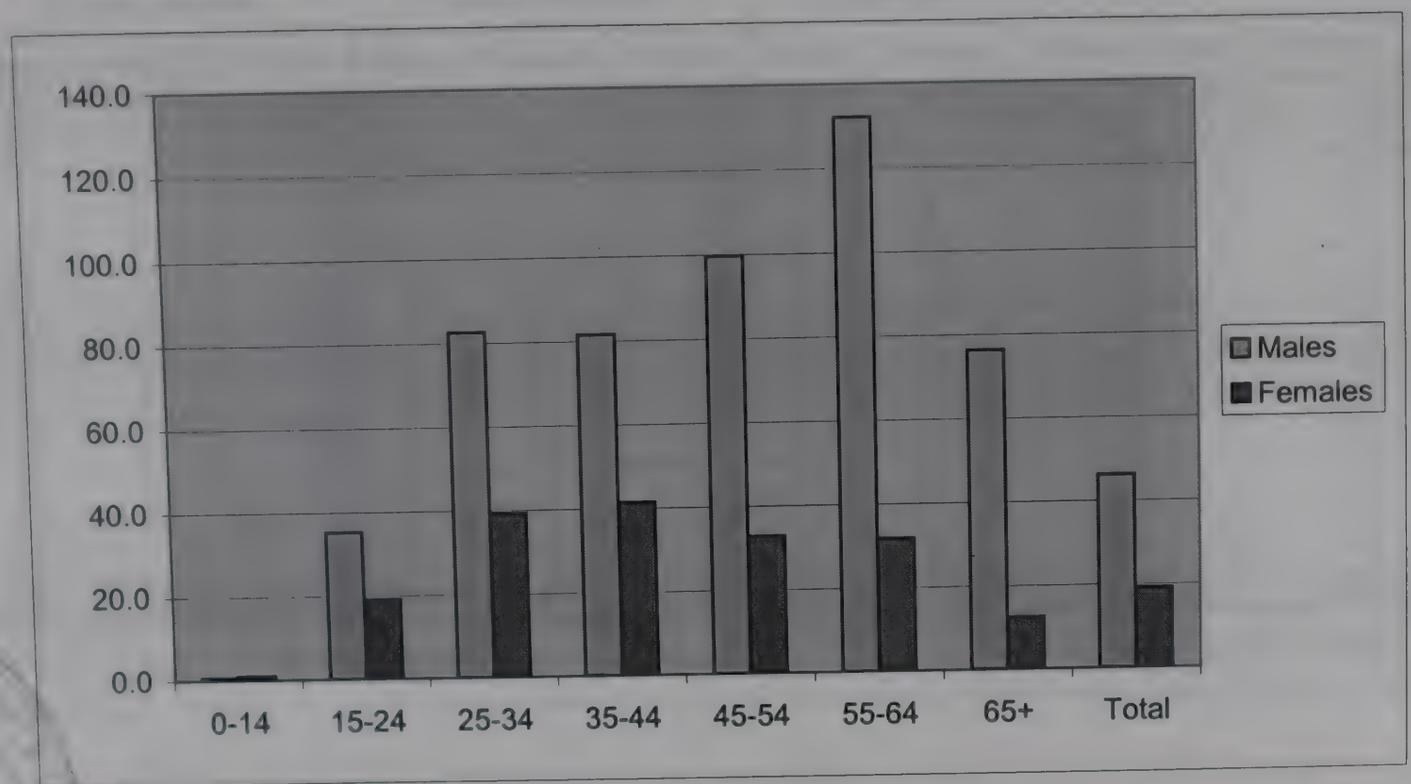
	0-14	15-24	25-34	35-44	45-54	55-64	65+	Total
Males	9	229	432	331	299	261	120	1681
Females	12	116	205	155	89	60	18	655
All	21	345	637	486	388	321	138	2336

MEDAK DISTRICT, 1996-Q2 to 1998-Q4
RNTCP: NEW SMEAR-POSITIVES BY AGE & SEX, % OF TOTAL FOR EACH SEX

	0-14	15-24	25-34	35-44	45-54	55-64	65+	Total
Males	1%	14%	26%	20%	18%	16%	7%	100%
Females	2%	18%	31%	24%	14%	9%	3%	100%
All	1%	15%	27%	21%	17%	14%	6%	100%

MEDAK DISTRICT, 1996-Q2 to 1998-Q4
RNTCP: NEW SMEAR-POSITIVES BY AGE & SEX, ANNUAL RATE PER 100,000

	0-14	15-24	25-34	35-44	45-54	55-64	65+	Total
Males	0.6	35.4	82.6	81.5	99.7	132.1	76.3	46.2
Females	0.9	19.1	39.4	41.5	32.9	31.8	12.5	19.2
All	0.8	27.5	61.2	62.4	67.6	82.4	46.4	33.1
M/F ratio	0.7	1.8	2.1	2.0	3.0	4.1	6.1	2.4



Note: Age and sex distribution and M:F proportion taken from 1991 census for rural India;
Rates calculated on a total population of 25.63 lakh (1997 GoAP estimate)

HYDERABAD DISTRICT, 1995-98
RNTCP REGISTRATIONS OF NEW TUBERCULOSIS CASES BY TYPE OF DISEASE AND SEX

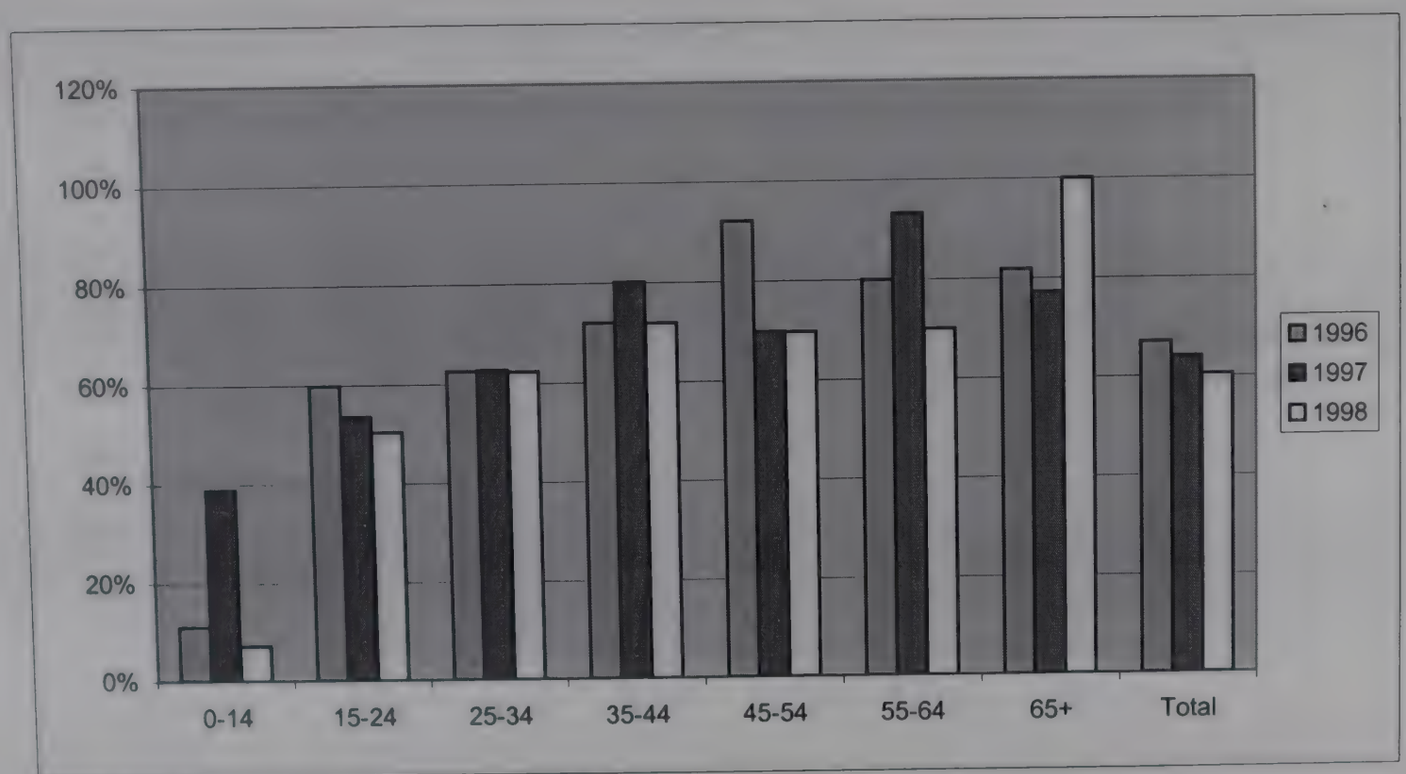
Quarter	Smear-positive			Smear-negative			Extra-pulmonary			All new cases			
	Male	Female	% Male	Male	Female	% Male	Male	Female	% Male	Male	Female	Total	% Male
1995-Q3	18	11	62%	5	1	83%	0	0		23	12	35	66%
1995-Q4	35	16	69%	15	5	75%	1	3	25%	51	24	75	68%
1996-Q1	86	44	66%	28	12	70%	4	13	24%	118	69	187	63%
1996-Q2	46	26	64%	2	7	22%	1	8	11%	49	41	90	54%
1996-Q3	85	42	67%	48	30	62%	17	16	52%	150	88	238	63%
1996-Q4	84	36	70%	56	40	58%	25	45	36%	165	121	286	58%
1997-Q1	103	52	66%	70	41	63%	27	45	38%	200	138	338	59%
1997-Q2	114	63	64%	75	55	58%	39	58	40%	228	176	404	56%
1997-Q3	82	51	62%	101	70	59%	50	67	43%	233	188	421	55%
1997-Q4	104	60	63%	53	42	56%	20	53	27%	177	155	332	53%
1998-Q1	98	62	61%	50	48	51%	25	58	30%	173	168	341	51%
1998-Q2	96	54	64%	65	36	64%	32	40	44%	193	130	323	60%
1998-Q3	112	67	63%	59	36	62%	24	46	34%	195	149	344	57%
1998-Q4	120	96	56%	72	46	61%	27	66	29%	219	208	427	51%
1995-98 (95Q3-98Q4)	1,183	680	63.5%	699	469	59.8%	292	518	36.0%	2,174	1,667	3,841	56.6%

HYDERABAD DISTRICT, 1995-98
RNTCP REGISTRATIONS OF NEW SMEAR-POSITIVE TUBERCULOSIS CASES BY AGE AND SEX

Quarter	0-14			15-24			25-34			35-44			45-54			55-64			65 & above			All new smear-positives			
	M	F	% M	M	F	% M	M	F	% M	M	F	% M	M	F	% M	M	F	% M	M	F	% M	M	F	Total	% M
1995-Q3	0	2	0%	5	6	45%	7	2	78%	4	0	100%	2	1	67%	0	0		0	0		18	11	29	62%
1995-Q4	0	1	0%	16	8	67%	7	3	70%	10	3	77%	1	1	50%	0	0		1	0	100%	35	16	51	69%
1996-Q1	0	3	0%	23	16	59%	23	17	58%	13	5	72%	20	1	95%	5	2	71%	2	0	100%	86	44	130	66%
1996-Q2	0	1	0%	17	14	55%	14	6	70%	6	4	60%	5	1	83%	2	0	100%	2	0	100%	46	26	72	64%
1996-Q3	0	4	0%	26	15	63%	18	14	56%	20	8	71%	12	0	100%	7	1	88%	2	0	100%	85	42	127	67%
1996-Q4	1	0	100%	22	14	61%	27	12	69%	15	4	79%	10	2	83%	6	2	75%	3	2	60%	84	36	120	70%
1997-Q1	2	1	67%	30	23	57%	23	17	58%	22	3	88%	15	7	68%	6	0	100%	5	1	83%	103	52	155	66%
1997-Q2	1	2	33%	33	25	57%	34	21	62%	19	8	70%	11	7	61%	14	0	100%	2	0	100%	114	63	177	64%
1997-Q3	2	2	50%	29	26	53%	23	15	61%	8	2	80%	12	3	80%	4	1	80%	4	2	67%	82	51	133	62%
1997-Q4	2	6	25%	26	28	48%	33	14	70%	20	4	83%	13	5	72%	4	1	80%	6	2	75%	104	60	164	63%
1998-Q1	0	3	0%	35	28	56%	28	15	65%	16	8	67%	13	6	68%	4	2	67%	2	0	100%	98	62	160	61%
1998-Q2	0	2	0%	33	20	62%	24	18	57%	21	6	78%	11	5	69%	6	3	67%	1	0	100%	96	54	150	64%
1998-Q3	0	0		27	33	45%	37	19	66%	24	9	73%	14	4	78%	8	2	80%	2	0	100%	112	67	179	63%
1998-Q4	1	8	11%	34	46	43%	27	18	60%	26	11	70%	15	8	65%	10	5	67%	7	0	100%	120	96	216	56%
1995-98 (95Q3-98Q4)	9	35	20%	356	302	54%	325	191	63%	224	75	75%	154	51	75%	76	19	80%	39	7	85%	1,183	680	1,863	63.5%

HYDERABAD DISTRICT, 1996-Q1 to 1998-Q4
RNTCP: PROPORTION OF MALES AMONG NEW SMEAR-POSITIVES BY AGE

	0-14	15-24	25-34	35-44	45-54	55-64	65+	Total
1996	11%	60%	63%	72%	92%	80%	82%	67%
1997	39%	54%	63%	80%	70%	93%	77%	64%
1998	7%	50%	62%	72%	70%	70%	100%	60%

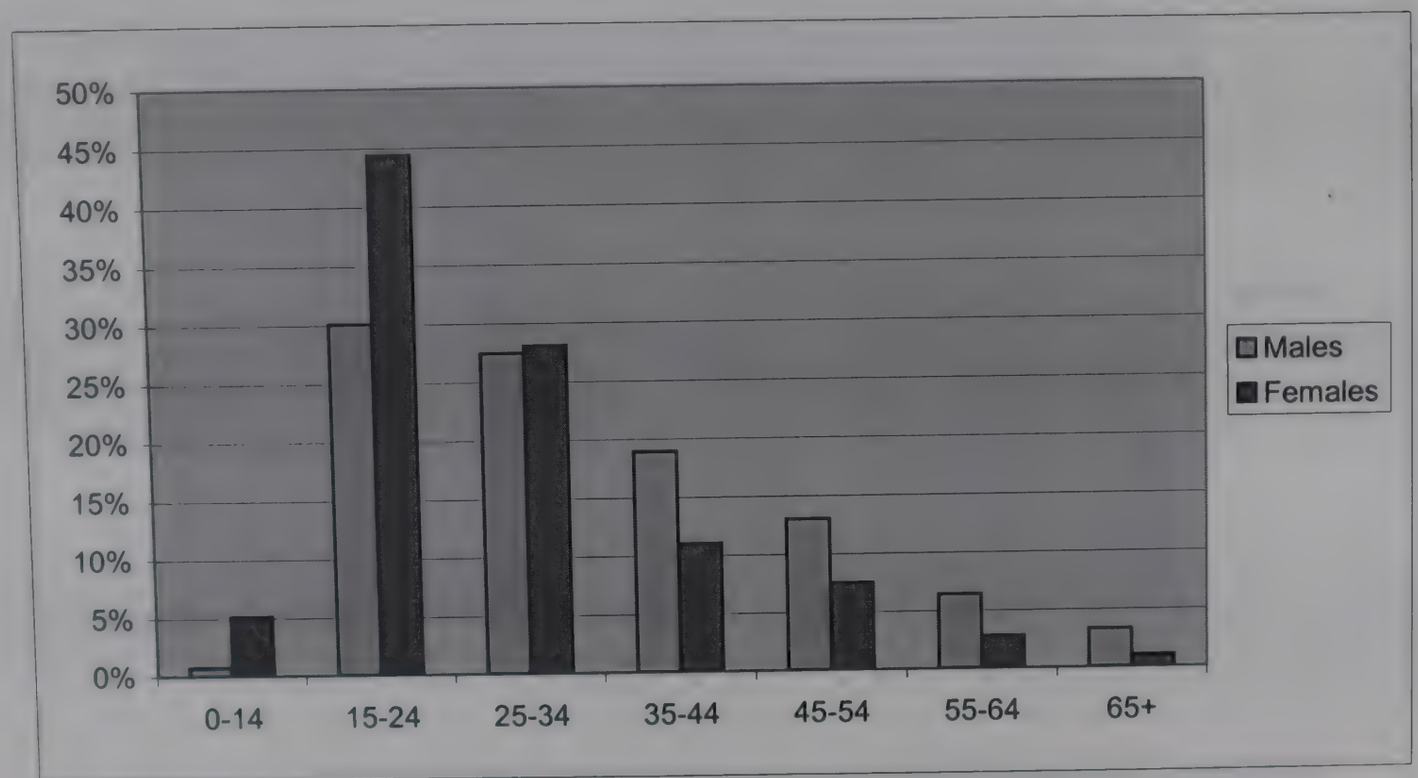


HYDERABAD DISTRICT, 1995-Q3 to 1998-Q4
RNTCP: NEW SMEAR-POSITIVE CASES BY AGE AND SEX

	0-14	15-24	25-34	35-44	45-54	55-64	65+	Total
Males	9	356	325	224	154	76	39	1183
Females	35	302	191	75	51	19	7	680
All	44	658	516	299	205	95	46	1863

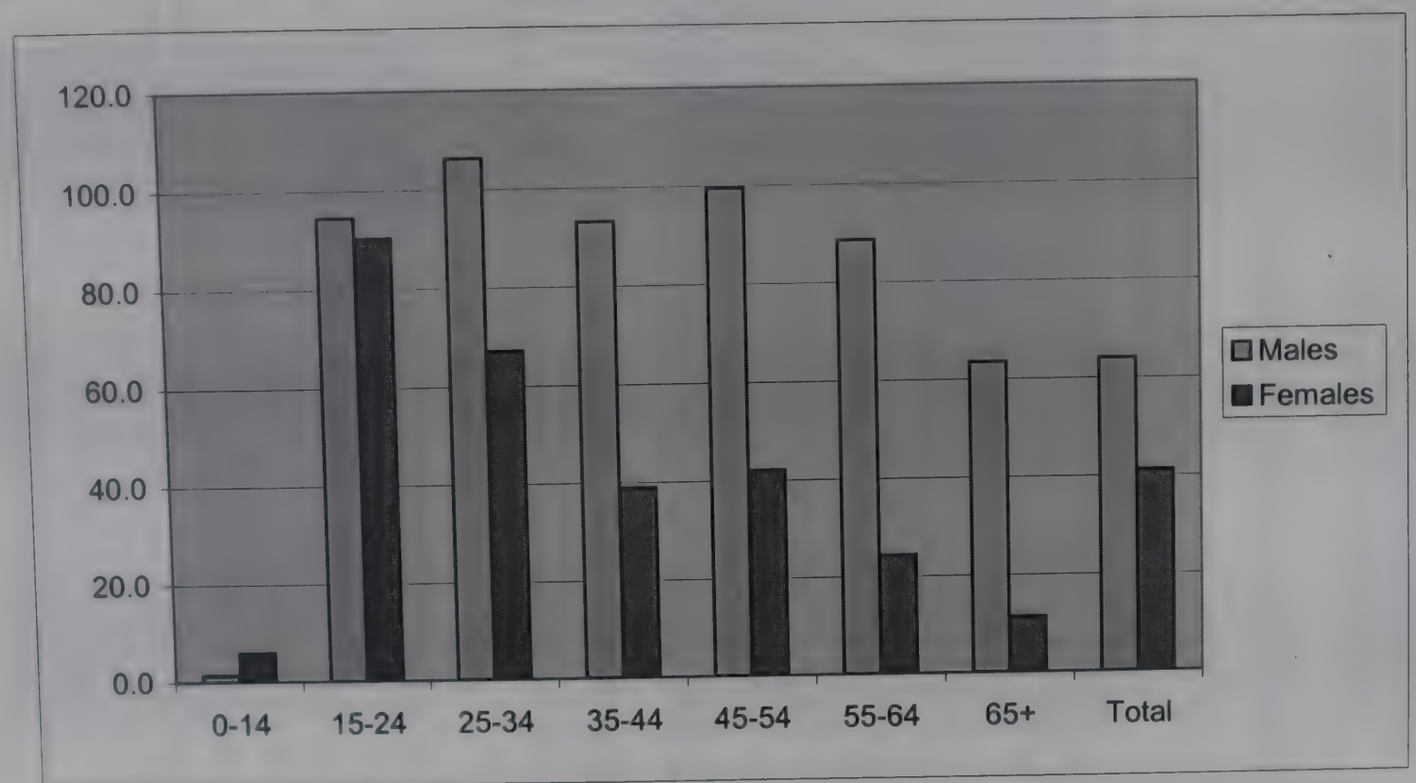
HYDERABAD DISTRICT, 1995-Q3 to 1998-Q4
RNTCP: NEW SMEAR-POSITIVES BY AGE & SEX, % OF TOTAL FOR EACH SEX

	0-14	15-24	25-34	35-44	45-54	55-64	65+	Total
Males	1%	30%	27%	19%	13%	6%	3%	100%
Females	5%	44%	28%	11%	8%	3%	1%	100%
All	2%	35%	28%	16%	11%	5%	2%	100%



HYDERABAD DISTRICT, 1995-Q3 to 1998-Q4
RNTCP: NEW SMEAR-POSITIVES BY AGE & SEX, ANNUAL RATE PER 100,000

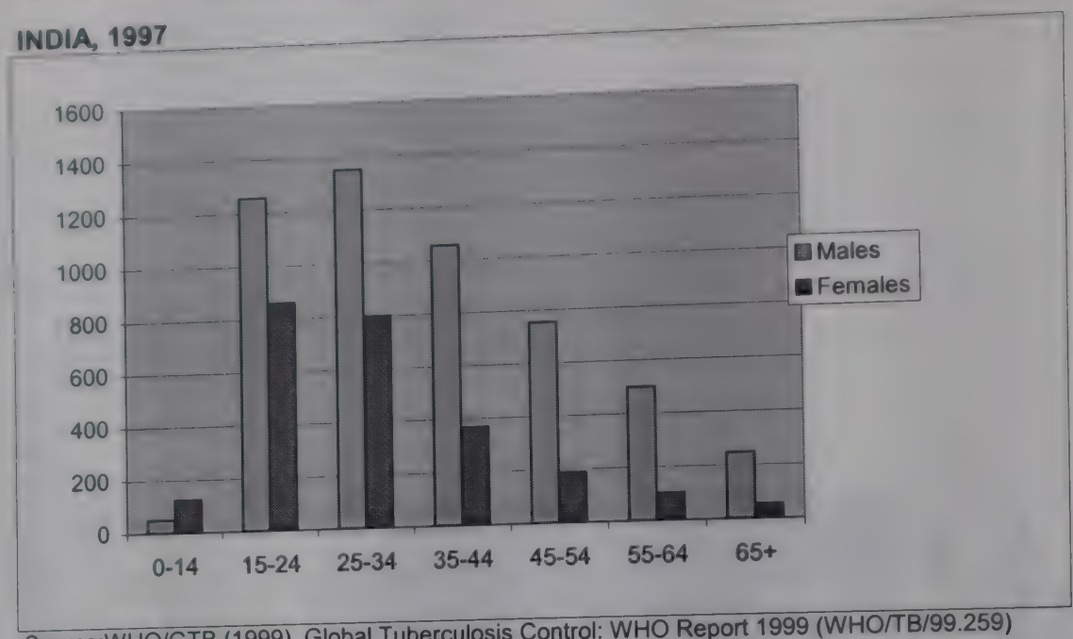
	0-14	15-24	25-34	35-44	45-54	55-64	65+	Total
Males	1.4	94.6	106.4	93.2	99.6	88.7	63.4	64.0
Females	6.0	90.4	67.2	38.9	42.0	24.3	11.4	41.2
All	3.7	92.7	87.5	68.8	73.5	57.2	39.5	53.2
M/F ratio	0.2	1.0	1.6	2.4	2.4	3.6	5.6	1.6



Note: Age and sex distribution and M:F proportion taken from 1991 census for urban India;
Rates calculated on a population of 10 lakh, the catchment population until 1998-Q4.

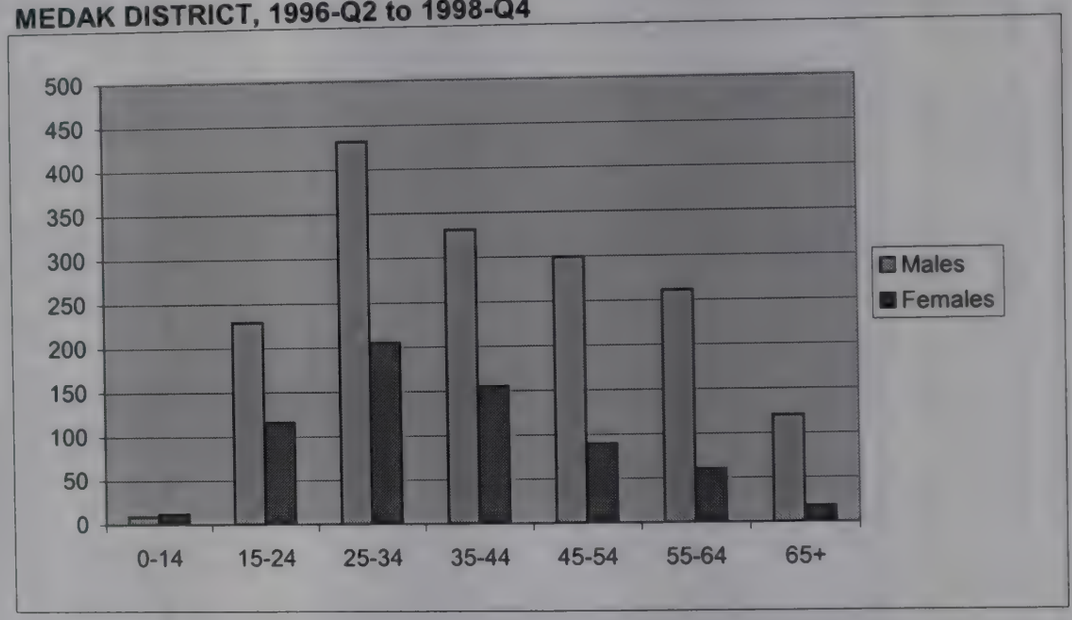
INDIA, MEDAK DISTRICT, HYDERABAD DISTRICT
RNTCP: NEW SMEAR-POSITIVE CASES BY AGE AND SEX

INDIA, 1997

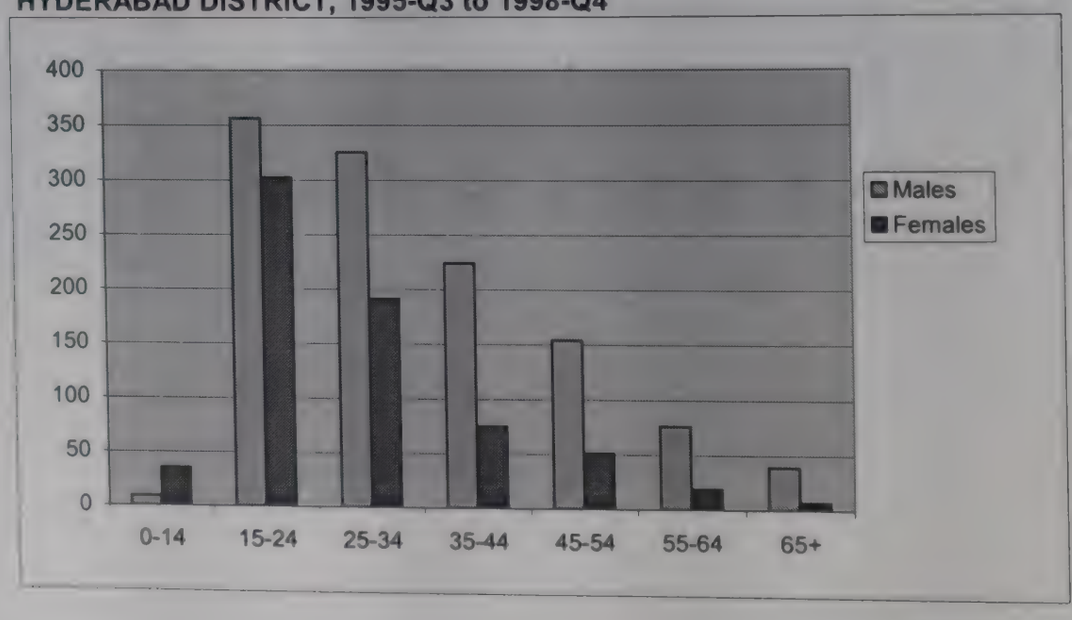


Source:WHO/GTB (1999). Global Tuberculosis Control: WHO Report 1999 (WHO/TB/99.259)

MEDAK DISTRICT, 1996-Q2 to 1998-Q4



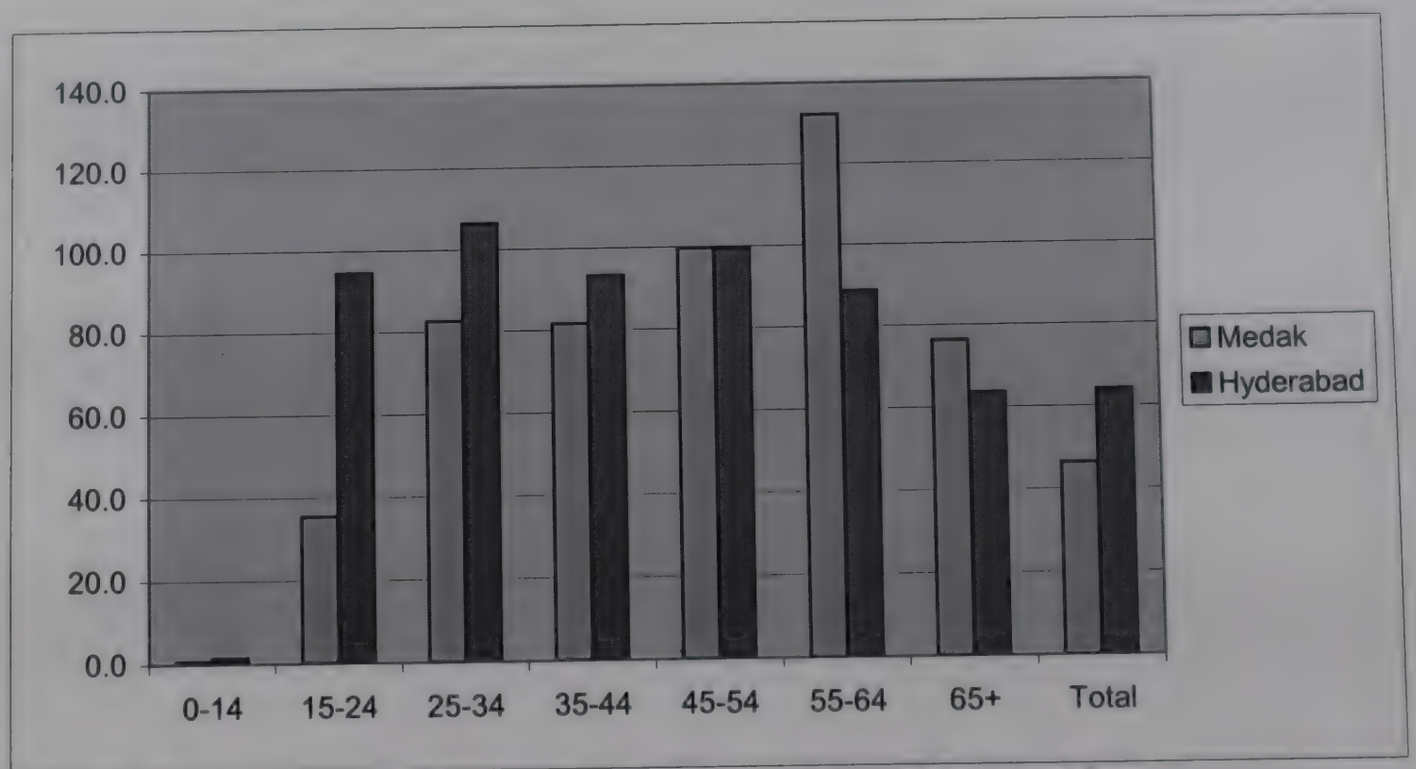
HYDERABAD DISTRICT, 1995-Q3 to 1998-Q4



APPENDIX 7A

MEDAK VERSUS HYDERABAD DISTRICTS, 1995 to 1998
RNTCP: MALE SMEAR-POSITIVES BY AGE, ANNUAL RATE PER 100,000

	0-14	15-24	25-34	35-44	45-54	55-64	65+	Total
Medak	0.6	35.4	82.6	81.5	99.7	132.1	76.3	46.2
Hyderabad	1.4	94.6	106.4	93.2	99.6	88.7	63.4	64.0

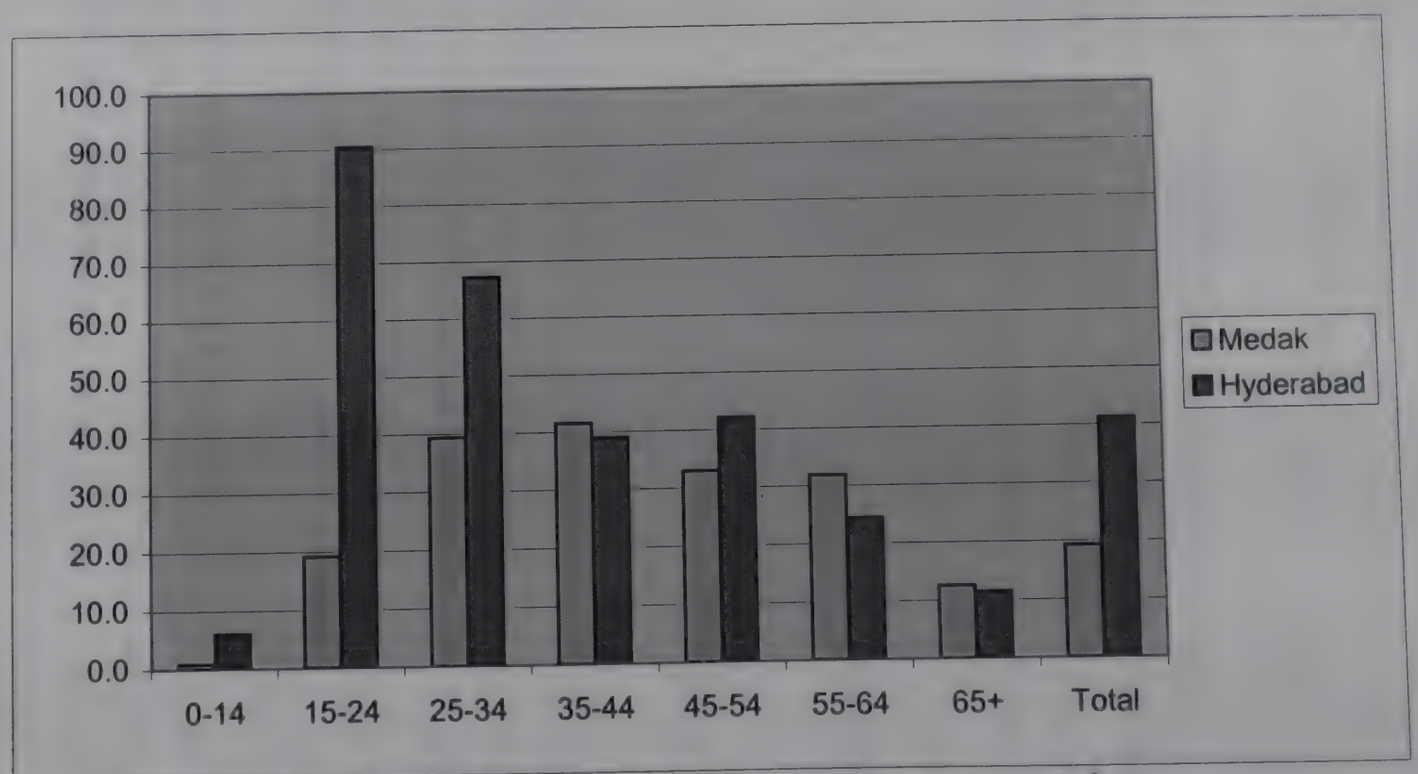


Note: Denominators for rates estimated by taking population distributions from 1991 census for rural (Medak) and urban (Hyderabad) populations.
Rates for Hyderabad based on 10.00 lakh population and for Medak on 25.63 lakh (1997).

APPENDIX 7B

MEDAK VERSUS HYDERABAD DISTRICTS, 1995 to 1998
RNTCP: FEMALE SMEAR-POSITIVES BY AGE, ANNUAL RATE PER 100,000

	0-14	15-24	25-34	35-44	45-54	55-64	65+	Total
Medak	0.9	19.1	39.4	41.5	32.9	31.8	12.5	19.2
Hyderabad	6.0	90.4	67.2	38.9	42.0	24.3	11.4	41.2



Note: Denominators for rates estimated by taking population distributions from 1991 census for rural (Medak) and urban (Hyderabad) populations.
Rates for Hyderabad based on 10.00 lakh population and for Medak on 25.63 lakh (1997).

EXECUTIVE SUMMARY

1. The two important objectives of the study are 1) to present the socio-demographic profiles of the defaulters of T.B treatment in Public hospitals and 2) to review the institutional responses to default.
2. The study is based on the review of treatment cards of the patients. Though the intrinsic limitations of this methodology are known before, this strategy is preferred in view of limitations of time, budget and also the limited objective of the study – to help design the future operational research.
3. For the purpose of this study, treatment cards of all the defaulters of T.B treatment under RNTCP in Medak district and Hyderabad in A.P were reviewed. Further, to allow for comparisons, a matching sample of Cured/Treatment completed patients and also patients registered under the NTP were also considered. Thus the data was obtained from 1449 treatment cards, including the 1131 cards of RNTCP patients.

Major findings:

Medak sample:

4. Though there is no clear indication that defaulters belong to any particular age group, the tendency to default among the members of higher age groups is evident. It could be inferred from the data that the chances of defaulting among those aged less than 25 years is less than 50%, while the chances of defaulting among those aged above 55 years is almost 75%.
5. The proportion of female defaulters is higher by about 4% to 10%, than their proportion among the cured sample. The proportion of females to males among the total registered patients was approximately 1 : 3.2. But the proportion of females to males among the defaulters was 1 : 2.8.

6. The data shows a slightly greater inability among the Hindu patients to complete the treatment in Public facilities.

7. A slightly greater tendency among the Category I patients to default is noted. The proportion of Category I, II and III patients among the total registered patients was 55.6%, 16.6% and 27.7%, respectively. But the proportion of the same categories among the defaulters was 59.2%, 16.6% and 24.2%, respectively.

8. Diagnosis within the division area is not all that common in three divisions, namely Tekmal, Mirzapur and Narsingi. Patients of Tekmal division particularly traveled greater distances for diagnosis either at DTC or at the Microscopic Centers located out side the division.

9. It appears that patients have not felt it difficult to cover a distance of about 10 Kms For availing treatment. The completion of treatment was, however, effected if the patients were to travel more than 10 Kms.

10. Non-availability of adequate transport facilities too seems to have not influenced the completion of treatment.

11. By and large, the patients have commenced the treatment without much delay (within three days) after the diagnosis. In case of Sangareddy and Siddipet divisions' slightly greater tendency to default by those who comparatively commenced the treatment late is noted.

12. About 70% of the patients completed (those who completed!) the treatment according to the treatment schedule. Patients of Siddipet and Mirzapur divisions interrupted the treatment on one or more occasions and hence filed to complete the treatment as on expected date.

13. A quarter of the patients, who interrupted the treatment on some occasions, could complete the treatment ultimately only after 30 days of the expected date of completion.

14. Of the total defaulters, a slightly more than two-thirds were those who defaulted during the intensive phase. The patients who defaulted immediately after the intensive phase comprised another 15.2%.

15. The tendency to default ultimately was also shown by not completing the required follow up sputum examinations in time.

16. 16.3% of the total defaulters were initial defaulters. The data shows that many of those who defaulted during the intensive phase have done so after treatment for only a few days.

17. Study reveals very poor recording practices relating to defaulter retrieval actions. The date on which the patient was considered as default was not always recorded. In case of 12.7% of the defaulters, the time lag between the date of interruption and recorded date of default was less than five days. This was less than one month in the case of another one fifth of the patients. Thus, repeated contacts with patients prior to declaring, as default appears to be uncommon.

18. Of those who interrupted the treatment (prior to their ultimate completion of treatment) 48% have interrupted only once, but those who interrupted for four or more times too comprised a very significant percentage (21%).

19. Default retrieval actions were only rarely recorded in the treatment cards. The available records show that the action was initiated only after seven days in majority of the cases.

20. The male health workers like the MPHA (M), Laboratory Technicians, CHO seems to have functioned better than the Pharmacists have as DOTS observers. Among the total defaulters, the proportion of patients with Pharmacists as DOTS observers is comparatively more.

Hyderabad sample

21. The distribution of patients by age groups showed trends similar to those observed in case of Medak. But the proportion of patients of above 41 years among the defaulters is not as much as it was observed in Medak. Unlike in Medak, the proportion of those aged less than 20 years is significantly higher among the cured sample.

22. The proportion of females both among the cured and the defaulters was considerably high in Hyderabad than in Medak. But the trends were the same.

23. In contrast to findings in Medak, the proportion of Hindus among the cured sample was slightly higher (69.5%) than what it was among the defaulters (66.4%).

24. The proportion of Category I patients among the defaulters is slightly high in Hyderabad.

25. The preference for higher level institutions for diagnosis is evident, as almost half the patients in Hyderabad were diagnosed at the STC.

26. That the distance of less than 10 Kms is not greatly hindering the treatment is revealed. It is the *distance* and not really the travel time and lack of adequate transport, which matter when the patients have to travel "more" distance for treatment.

27. Majority of the patients commenced the treatment within three days of diagnosis. Just for two out of every 10, all commenced the treatment within six days.

28. As in the case of Medak, slightly more than two thirds of the defaulters were those who discontinued treatment during the intensive phase.

29. The problem of initial defaulters is a bit negligible in Hyderabad. However, the problem of early default is as high as in the case of Medak.

30. The proportion of patients who completed the treatment as per schedule is slightly less in Hyderabad. Almost one in eight patients interrupted the treatment for more than three times, where as a similar percentage of patients interrupted for at least two times.

31. The records reveal comparatively satisfactory efforts by the staff for default retrieval in Hyderabad. Some action was initiated at least in five days time in about 47% of the patients.

32. Most frequently, the first retrieval action was intimation by post card. (60%). The subsequent retrieval actions, in the form of " home visit" were taken only after a gap of about 7 – 10 days.

33. As the DOTS observers were most frequently, the Pharmacists of the T.B Clinics, it is difficult to comment on the association of default and the category of DOTS observer.

Short Course and Standard Regiment:

34. Patients of higher age groups generally defaulted more than the others, though the proportion of members of age groups 21-25 years and 26-30 years among the defaulters of the SCC and SR categories is also more as compared to their proportions among the RNTCP patients.

35. More females than males tended to complete the treatment.

36. Greater proportions of Moslems tended to complete treatment when on SCC treatment than when on SR treatment in Hyderabad.

37. Distance traveled by the patients had no bearing on the completion of treatment for either the patients registered for SR or SCC category of treatment in the city of Hyderabad The data for Medak however reveals that patients requiring travelling longer distances tended to default in greater numbers.

38. The proportions of patients who interrupted the treatment for different times in case of patients put on SCC or SR categories of treatment is lesser as compared the proportions in the RNTCP patients.

39. As in the case of RNTCP, majority of SR and SCC patients also defaulted from the treatment during the intensive phase or immediately after the intensive phase. Similarly, the proportions of those who defaulted after consumption of 60 doses in the SCC category were more in Medak than in Hyderabad.

DFID CONSULTANCY

PATIENT DEFAULT AND DEFAULTER RETRIEVAL ACTION IN MEDAK AND HYDERABAD DISTRICTS: A PRELIMINARY ASSESSMENT BASED ON ROUTINELY AVAILABLE DATA

Submitted to the State Tuberculosis Office, Andhra Pradesh
and The Department for International Development, New Delhi

Dr BV Sharma
Lecturer, Department of Anthropology
University of Hyderabad, (P.O) Central University
HYDERABAD – 500 046

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ACKNOWLEDGEMENTS

The present study has been conducted under the guidance of Dr Klaus Jochem, Consultant to DFID, New Delhi, India. Dr Klaus helped at all stages of the study like designing of the proforma, sampling, analysis and presentation of data. I take this opportunity to place on record my sincere thanks and sense of gratitude for all the academic support rendered by him in conducting the study.

BV SHARMA

ABBREVIATIONS

AP	Andhra Pradesh
APVVP	Andhra Pradesh Vaidya Vishana Parishad
CAS	Civil Assistant Surgeon
CTD	Central Tuberculosis Division, DGHS
DCS	Deputy Civil Surgeon
DFID	Department for International Development
DGHS	Directorate General of Health Services
DOTS	Directly Observed Therapy, Short-Course
DME	Directorate of Medical Education
DTC	District Tuberculosis Centre
DTCS	District Tuberculosis Control Society
DTO	District Tuberculosis Officer
DTP	District Tuberculosis Programme
DTS	Domicilary Tuberculosis Services
GOI	Government of India
MPHS	Multi-Purpose Health Supervisor
MSD	Medical Store Depot
MSO	Medical Store Organisation, DGHS
MNO	Male Nursing Orderly
NTI	National Tuberculosis Institute , Bangalore
NTP	National Tuberculosis Programme
PEC	Project Evaluation Committee Submission
PSU	Project Support Unit
PY1	Project Year One
RNTCP	Revised National Tuberculosis Control Programme
SCC	Short-Course Chemotherapy (6-8 months)
SR	Standard Regimen (12 months)
STC	State Tuberculosis Centre (old designation for STDC)
STDC	State Tuberculosis Training and Demonstration Centre
STO	State Tuberculosis Office
STS	Senior Treatment Supervisor
STLS	Senior Tuberculosis Laboratory Supervisor
TU	Tuberculosis Unit (sub-district)

EXECUTIVE SUMMARY

Terms of Reference

1. The two important objectives of the study are 1) to present the socio-demographic profiles of the defaulters of T.B treatment in Public hospitals and 2) to review the institutional responses to default.
2. The study is based on the review of treatment cards of the patients. Though intrinsic limitations of this methodology are known before, this strategy is preferred in view of limitations of time, budget and also the limited objective of the study – to help design the future operational research.
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Summary of findings

Medak sample

4. Though there is no clear indication that defaulters belong to any particular age group, the tendency to default among the members of higher age groups is evident. The chances of defaulting among those aged less than 25 years is less than 50%, while the chances of defaulting among those aged above 55 years is almost 75%.
5. The proportion of females to males among the total registered patients is approximately 1: 3.2. But the proportion of females to males among the defaulter is 1:2.8
6. The proportion of Category I, II and III patients among the total registered patients is 55.6%, 16.6% and 27.7%, respectively. But the proportion of the same categories among the defaulters is 59.2%, 16.6% and 24.2%, respectively.
7. Patients have not felt it difficult to cover a distance of about 10 Kms. for availing treatment. The completion of treatment was, however, effected if the patients were to travel more than 10 Kms. Non – availability of adequate transport facilities too, did not influence the completion of treatment.
8. About 70% of the patients completed (those who completed) the treatment according to the treatment schedule. A quarter of the patients, who interrupted the treatment on some occasions, could complete the treatment ultimately only after 30 days of the expected date of

completion. Of those who interrupted the treatment (prior to their ultimate completion of treatment) 48% have interrupted only once, but those who interrupted for four or more times too comprised a very significant percentage (21%).

9. Of the total defaulters, a slightly more than two-thirds were those who defaulted during the intensive phase. The patients who defaulted immediately after the intensive phase comprised another 15.2%.
10. 16.3% of the total defaulters were initial defaulters. The data shows that many of those who defaulted during the intensive phase have done so after treatment for only a few days.
11. Study reveals very poor recording practices relating to defaulter retrieval actions. The date on which the patient was considered as default was not always recorded. In case of 12.7% of the defaulters, the time lag between the date of interruption and recorded date of default was less than five days. This was less than one month in the case of another one fifth of the patients. Thus, repeated contacts with patients prior to declaring as default are uncommon.
12. Default retrieval actions were only rarely recorded in the treatment cards. The available records show that the action was initiated only after seven days in majority of the cases.
13. The male health workers like the MPHA (M), Laboratory Technicians and CHOs functioned better than the Pharmacists have as DOTS observers.

Hyderabad sample

14. The distribution of patients by age groups showed similar trends to those observed in case of Medak. However, unlike in Medak, proportion of those aged less than 20 years being 26%, is significantly higher among the cured sample as compared to the percentage among the defaulters (14.2%).
15. The proportion of females among the defaulters is 36.8%, which is considerably high as compared to their proportion in Medak.
16. The category III patients constituted one third of the total defaulters. The proportion of Category II patients is also comparatively higher in Hyderabad with 27.9% of the total defaulters.
17. The patients who lived within three-kilometre distance from treatment centres comprised 53.4% of the total defaulters. Thus, the distance of less than 10 Kms is not greatly hindering the treatment is revealed. It is the distance and not really the travel time and lack of adequate [illegible] when the patients have to travel "more" distance for treatment

18. As in the case of Medak, slightly more than two thirds of the defaulters were those who discontinued treatment during the intensive phase.
19. The problem of initial defaulters is negligible in Hyderabad as only 3% defaulted without commencement of any treatment. However, the problem of early default is as high as in the case of Medak. Almost a quarter of the patients discontinued the treatment within seven days after the initiation of treatment.
20. Almost one in eight patients interrupted the treatment for more than three times, where as a similar percentage of patients interrupted for at least two times.
21. Default retrieval actions are poor as per programme norms, but surely better as compared to Medak since some action was initiated at least in five days time in about 47% of the patients. Most frequently, the first retrieval action was intimation by post card (60%). The subsequent retrieval actions, in the form of "home visit" were taken only after a gap of about 7 – 10 days.

Short Course and Standard Regiment.

22. Patients of higher age groups generally defaulted more than the others, though the proportion of members of age groups 21 – 25 years and 26 – 30 years among the defaulters of the SCC and SR categories is also more as compared to their proportions among the RNTCP patients.
23. More females than males tended to complete the treatment.
24. Greater proportions of Moslems tended to complete treatment when on SCC treatment than when on SR treatment in Hyderabad.
25. Distance travelled by the patients had no bearing on the completion of treatment for either the patients registered for SR or SCC category of treatment in the city of Hyderabad. The data for Medak however reveals that patients requiring travelling longer distances tended t default in greater numbers.
26. The proportions of patients who interrupted the treatment for different times in case of patients put on SCC or SR categories of treatment is lesser as compared the proportions in the RNTCP patients.
27. As in the case of RNTCP, majority of SR and SCC patients also defaulted from the treatment during the intensive phase or immediately after the intensive phase. Similarly, the proportions of those who defaulted after consumption of 60 doses in the SCC category were more in Medak than in Hyderabad.

Recommendations (summarised)

1. Setting guidelines for defaulter retrieval (roles, responsibilities, priorities, maximum delays)

The selection of Laboratory Technicians as DOTS observers should be avoided. Pharmacists as DOTS observers may considered only as last option. The role responsibilities of different field staff involved in the programme have to specifically defined. The training programmes need to address the issues of setting the default retrieval as top priority in the programme. There is an urgent need to evolve strategies for co-ordination of work among the field staff available within the secondary hospitals (attached to P.P Units), the staff of the Sub-centres located in the towns where the hospitals are functioning and the DOTS observers in the secondary hospitals. Alternately, the Sub-centres located in the towns where the hospitals are functioning could be selected as DOTS centres rather than the hospitals.

2. Improve the recording of defaulter retrieval actions

Monitoring of the programme will suffer unless a system of recording of defaulter retrieval actions is evolved. Provision may be made on the treatment cards maintained by the DOTS observers for the recording of the specific retrieval actions initiated in case of treatment interruptions. Submission of monthly reports on the default retrieval actions undertaken along with the details of treatment interruptions of patients currently under treatment by the DOTS observers /MPHWs should be made mandatory.

3. Regular audits of default

Regular audits of default are essential to identify the shifts in the default problem.

4. Addressing high default rates of patients not started on DOTS regimens

As a very large proportion of T.B patients continue to be treated under NTP, the need to address simultaneously the high default rates of such patients is evident. The selection of patients for NTP or RNTCP treatment or the preferred choices of patients with regard to RNTCP/NTP treatment would reveal the providers' perceptions of patients as also the patient perceptions of treatment regimes.

5. *Suggestions for further research*

The study reveals the significance of further research in the following lines

1. A prospective study of defaulters that would give greater insights on: 1) the circumstances leading to default/ carry through the treatment, 2) familial and community responses to default, 3) the specific role played by the health functionaries and DOTS observers in the default retrieval and 4) strategies that failed and those which succeeded in the default retrieval and the contexts in which the strategies have been adopted.

2. Follow up studies of defaulters of T.B treatment in Public hospitals on health seaking and illness behviour

3. Gender discriminations in health care and accessibility and acceptability of T.B treatment in Public hospitals for women

4. Potential role of Panchayat Raj institutions in the implementation and monitoring of T.B Programme

5. Action research to understand the strengths and weaknesses of different models for the organisation of DOTS (through Health functionaries; Community Volunteers; NGO volunteers; Registered Medical Practitioners etc.)

TABLE OF CONTENTS:

INTRODUCTION

The problem of default under NTCP

Tuberculosis continues to be major health problem in the state of Andhra Pradesh. It not only causes about 45 deaths per 100,000 population in the State, but also productivity loss due to disability and pre mature mortality to the tune of about 1700 crores per annum. In spite of National Tuberculosis Programme in place for over three decades, T.B still continues to be the one causing very high number of deaths and disease in the State. The fact that the smear positive cases comprise less than one third of the total number of cases detected reveal that only a fourth or fifth of the cases are detected. The poor performance of NTP is also evident from the fact that only a third of the cases registered in public sector complete the treatment.

Purpose of this report

The RNTCP programme being implemented in Medak district and some parts of Hyderabad in Andhra Pradesh since April 1996 definitely produced better results than in the case of NTP. But, the success rate is still not up to the expectations. Default rates remained quite significant. The cohort analysis of the patients for the year 1997 in Medak district showed that while the defaulters among the sputum positive new patients constituted about 14%, the percentage of defaulters among the negative patients was about 30%. The present study is aimed to understand the social background of the defaulters, as it would help to categorize the defaulters into different social types and through more light on the social dimensions of the disease. An in-depth examination of the association of different socio-demographic factors with default behaviour helps us to estimate the coefficients of aggravation and preservation of default.

The RNTCP envisages DOTS strategy to reduce the default. The programme norms demand an early default retrieval action. Hence, it is also attempted in this study to know the institutional responses to default. Thus the two primary objectives of the study are:

1. To present socio-demographic profiles of the defaulters of T.B treatment in public hospitals, so as to identify defaulters as a group of those patients who did not complete treatment

2. To review the institutional responses to the default, and to understand the recording patterns of these institutional responses.

SOURCES OF INFORMATION FOR THIS REPORT

Routine reports on case registrations and treatment outcome for RNTCP and NTP

Data was abstracted from the different registers and reports maintained/submitted at/by the T.B units and the D T C under the RNTCP and the NTP. These reports included: 1] the Report on new cases and relapses (RNTCP) 2] the Report on the results of treatment (RNTCP), and 3] the Report on cohort analysis (NTP). The T.B register and the Laboratory register were the two records used not only to cross verify some data but also to gather some additional information.

Review of treatment cards of patients registered as default

The study is primarily based on the review of treatment cards maintained for all the patients registered for T.B treatment in Public hospitals. All the available treatment cards (276 out of the total 312) defaulters of RNTCP treatment during the period of October, 96 and September 1997 in Medak district (representing the rural sample) and also in Hyderabad (representing the urban sample) were reviewed. The distribution of the sample patients according to the type of disease as compared to the distribution out of the total numbers is as follows.

TABLE 1: Distribution of sample defaulters and the 'recorded' defaulters in Medak by disease categories

Disease category	Recorded defaulters		Sample defaulters	
	Number	Percent	Number	Percent
New Smear positive	153	49.0	142	51.4
New Smear Negative	103	33.0	85	30.8
New Extra pulmonary	2	0.7	2	0.8
Others	54	17.3	47	17.0
Total	312	100.0	276	100.0

As a significant proportion of T.B patients are registered under the NTP regimes, it was felt necessary to cover this group too. The numbers of patients registered under NTP in Medak district during the reference period followed were less and all of them were registered under the SCC category. But in Hyderabad a substantial number of patients were put on NTP treatment, both under the SR and SCC regimes in the RNTCP areas. The default rates for the patients registered under the NTP were very high. In view of this, only about 10 percent of the total defaulters were selected on a systematic random basis. The total sample size of the defaulters for the study was as follows:

TABLE 2: Distribution of sample of defaulters by treatment categones

Category of treatment	Hyderabad	Sangareddy	Total
RNTCP	301	276	577
NTP(SR)	133	-	134
NTP(SSC)	40	51	91
TOTAL	475	327	802

.3 *Review of a matching sampling of treatment cards of patients registered as completing treatment*

It was thought the interpretations based on the review of treatment cards of defaulters sample would be more meaningful only when compared to the findings of sample of those completed treatment. Hence, data was abstracted from a matching sample of those registered as completing treatment. The number of cards selected in this category from Hyderabad and Medak was as follows.

TABLE 3: Distribution of matching sample of patients registered as completing treatment

Category of treatment	Hyderabad	Medak	Total
RNTCP	289	265	554
NTP(SR)	37	-	37
NTP(SSC)	52	4	56
TOTAL	378	269	647

To draw the matching sample of cured/treatment completed patients under the RNTCP patients, the principles of "same PHC" and "same category of treatment" were followed. However, when the cured patients were not available, patients of the neighbouring PHC, but of the same division were selected. Similarly, when patients of the same category of treatment were not available in the same PHC, other categories were also considered. The representativeness of the sample of controls in Medak district could be judged from the following comparisons.

TABLE 4: RNTCP registrations by category & treatment outcomes (Cured, Treatment completed and Default)

Category	Total Registrations		Outcomes of all registered patient Cured/Treatment Completed		Outcomes of Controls Cured/Treatment completed	
	Number	%	Number	%	Number	%
Category I	1013	55.7	689	51.4	168	63.0
Category II	301	16.6	188	14.0	47	18.0
Category III	502	27.7	464	34.6	50	19.0
Total	1816	100.0	1341	100.0	265	100.0

TABLE 5: RNTCP registrations by type of disease & treatment outcomes (Cured/ treatment completed)

Category	Total Registrations		Outcomes of all registered patient Cured/Treatment Completed		Outcomes of Controls Cured/Treatment completed	
	Number		Number	%	Number	%
New smear positive	905	50.0	689	50.5	127	48.0
New smear negative	582	32.0	438	32.0	90	34.0
New extra pulmonary	28	1.5	26	1.9	3	1.0
Others	301	16.5	213	15.6	45	17.0
Total	1816	100.0	1366	100.0	265	100.0

TABLE 6: Sex distribution of all RNTCP registrations, defaulters & sample of those who completed treatment

Category	Smear positive			Smear negative			Extra pulmonary			All new cases		Total	
	Male	Female	% male	Male	Female	% male	Male	Female	% male	Male	Female	No.	% male
All registrations	652	253	72.0	414	168	71.0	17	11	60.7	1083	432	1515	71.0
Defaulters	104	38	73.0	58	25	70.0	2	1	66.6	164	64	228	71.0
Sample of cured	99	28	77.0	69	21	76.0	2	1	66.6	170	50	220	77.0

TABLE 7: RNTCP: New smear-positive cases by age groups

	0-14		15-24		25-34		35-44		45-54		55-64		65 & above		Total	
	No	%	No.	%	No.	%	No.	%	No.	%	No.	%	No	%	No.	%
All registrations	5	0.6	108	11.9	251	27.7	195	21.5	143	15.8	145	16.0	58	6.4	905	100
Defaulters	1	0.8	23	16.2	40	28.1	28	19.7	31	21.8	14	9.9	5	3.5	142	100
Sample of cured	1	0.7	9	7.1	41	32.3	25	19.7	16	12.6	21	16.6	14	11.0	127	100

TABLE 8: Male new smear-positive cases by age groups

	0-14		15-24		25-34		35-44		45-54		55-64		65 & above		Total	
	No	%	No.	%	No.	%	No.	%	No.	%	No.	%	No	%	No.	%
All registrations	2	0.3	72	11.0	169	25.9	134	20.6	107	16.4	115	17.6	53	8.1	652	100
Defaulters	1	0.9	17	16.4	30	28.9	18	17.3	24	23.0	10	9.6	4	3.9	104	100
Sample of cured	1	1.0	7	7.1	31	31.3	17	17.2	13	13.1	17	17.2	13	13.1	99	100

TABLE 9: Female new smear-positive cases by age groups

	0-14		15-24		25-34		35-44		45-54		55-64		65 & above		Total	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
All registrations	3	1.2	36	14.2	82	32.4	61	24.1	36	14.2	30	11.9	5	2.0	253	100
Defaulters	-	0.0	6	15.8	10	26.3	10	26.3	7	18.4	4	10.6	1	2.6	38	100
Sample of cured	-	0.0	2	7.1	10	35.7	8	28.6	3	10.7	4	14.3	1	3.6	28	100

2.4 *Cohort analysis of patients followed at secondary hospitals*

Cohort analysis of the patients followed in nine secondary hospitals under the administrative control of APVVP and also patients followed in the Civil Dispensary (Sadasivpet in Medak district) as well as in the Rural Health Centre (Pathanchervu, in Medak district) was carried out to compare the default problem in such hospitals vis-à-vis the others.

2.5 *Interviews with DTO, RNTCP supervisory staff & Medical Officers of secondary hospitals*

Data was elicited from the DTO, the Medical Officers of secondary hospitals and the available STS and STLS through interviews using an interview guide to supplement the information gathered from the treatment cards. The interviews covered the issues like role responsibilities of staff for DOTS, delays in defaulter retrieval actions, recording patterns of retrieval actions, training needs etc.

3 DESCRIPTION OF PATIENTS REGISTERED AS DEFAULT IN MEDAK DISTRICT

3.1 *Overview of patient registrations and treatment outcomes (RNTCP)*

During the first three-quarters of the year 1997 and the last quarter of 1996, a total of 1816 patients were registered for RNTCP treatment in Medak. The treatment out comes of patients treated under different categories of disease are as follows.

TABLE 10: RNTCP registrations and treatment outcomes (cured, treatment completed and default)

Type of Disease	Total registrations	Out comes							
		Cured	%	Treatment completed	%	Default	%	Other outcomes	%
New smear positives	905	676	74.7	13	1.4	153	16.9	63	7.0
New smear negatives	582	[illegible]		438	75.2	103	17.7	41	7.0
New extra pulmonary	28	[illegible]		26	92.8	2	7.2	--	–
Others	301	209	69.4	4	1.3	54	18.0	34	11.3
Total	1816	–	–	–	–	[illegible]	–	–	–

rofile of defaulters registered in Medak District under RNTCP

me of default during course of treatment

ata very clearly establishes the fact that DOTS during intensive phase is very critical. Of the total efaulters, a slightly more than two thirds were those who defaulted during the intensive phase. The atients who defaulted immediately after the intensive phase comprised another 15.2%. Defaulting during ie continuation phase is thus not so common. The data is contrary to the opinion of some that patients of tensive phase will be "self motivated" (in view of perceived severity of disease and also the actual ffering at this stage) to take treatment regularly and that the problem of default would be more during ntinuation phase, when the "illness disappears". This data of early default also needs an examination of hether it is default from treatment in Public facility? Or default from T.B treatment?

TABLE 11: Distribution of the defaulters by time of default in Medak district

Time of default	Mirzapur	Siddipet	Sangareddy	Narsingi	Tekmal	Total
Intensive	43	81	33	23	10	190
Continuation	5	20	12	7	0	44
Immediately after intensive	15	16	9	1	1	42

ata on number of doses consumed prior to default revealed that the initial defaulters comprised 16.3% of ie total defaulters. The members who defaulted prior to consuming 12 doses and those who defaulted ter taking 13-24 doses accounted for another 40% and 26%, respectively. The data thus shows that many f those who defaulted during the intensive phase have done so after treatment for only for a few days ome of these patients would have defaulted in view of their preference for treatment from Private sector or ternative systems of therapy. The need for greater motivation during the initiation of treatment is, however, ery obvious.

TABLE 12: Distribution of the defaulters by number of doses consumed by the time of default

o. of doses consumed	Mirzapur	Siddipet	Sangareddy	Narsingi	Tekmal	Total
Nil	18	13	3	6	5	45
1 – 12	22	50	23	16	5	112
13 – 24	16	32	17	6	1	72
25 – 36	4	9	6	7	0	26
37 – 48	1	3	2	0	0	7
Above 48	2	10	3	0	0	15

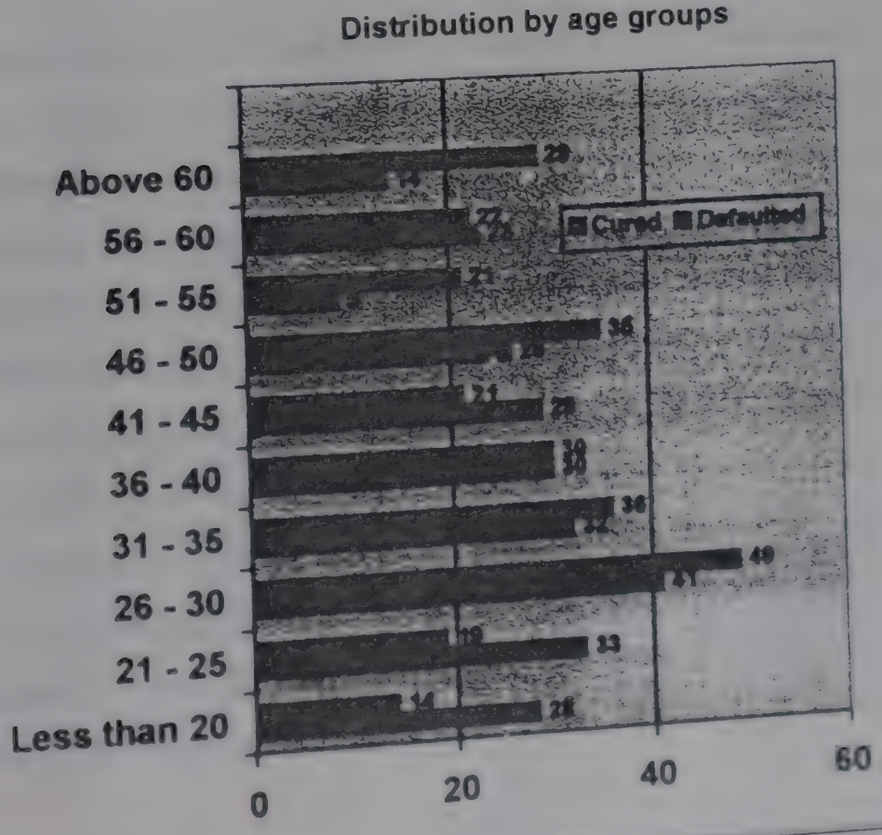
The data for different divisions shows that the problem of initial defaulters is particularly more in Mirzapur About a quarter of the patients of this division was initial defaulters The problem of early default is striking in Siddipet division, as about one half of the patients here discontinued just after consuming 1-12 doses.

2.2 Place of diagnosis

Diagnosis within the division area is not common in three divisions, namely Tekmal, Mirzapur and Narsingi. Only in the case of Sangareddy, and Siddipet, the diagnosis is most commonly within the division areas due to the location of DTC and the T.B Clinic at Sangareddy and Siddipet town, respectively. 101 out of the total 107 cases in Sagareddy division were diagnosed at the DTC. Similarly a large percentage (90.5%) of the cases in Siddipet division were diagnosed at the T.B Clinic at Siddipet. More patients (80%) of Tekmal division particularly, traveled greater distances for diagnosis either at DTC or at Microscopic Centers located out side the division. Where as 57.7% in Mirzapur was diagnosed out side the division area, such patients comprised a little less than half in Narsingi division.

3.2.3 Age and sex distribution of patients registered as default

Over all the proportion of members aged less than 40 years is higher among the cured patients and also among the defaulters. The proportion of the patients aged above 40 years among the defaulters, however,



being 46.3%, it is clear that the tendency to default is higher among the members of higher age groups. The data analysed separately for different divisions too, except in case of Tekmal division, showed a similar trend.

Compared to all other groups, the percentage of defaulters was high among the age group of 26-30 years in Mirzapur division. While 19.4% of defaulters belonged to 26-30 years, another 15% of defaulters belonged to 36-40 years, in this division. The proportion of those aged above 40 years is more by about 8% among the defaulters as compared to the proportion in the same age group among those who completed the treatment.

In Siddipet division, slightly more than one third of the defaulters belonged the age group of 26-35 years. Where as about two third among the cured patients belonged to the age group of less than 40 years, the proportion of members of the same age group among the defaulters was 54.7%. Very clearly, the proportion of those aged above 40 years is more among the defaulters.

TABLE 13: Distribution of cured and the defaulters by age groups in Medak district

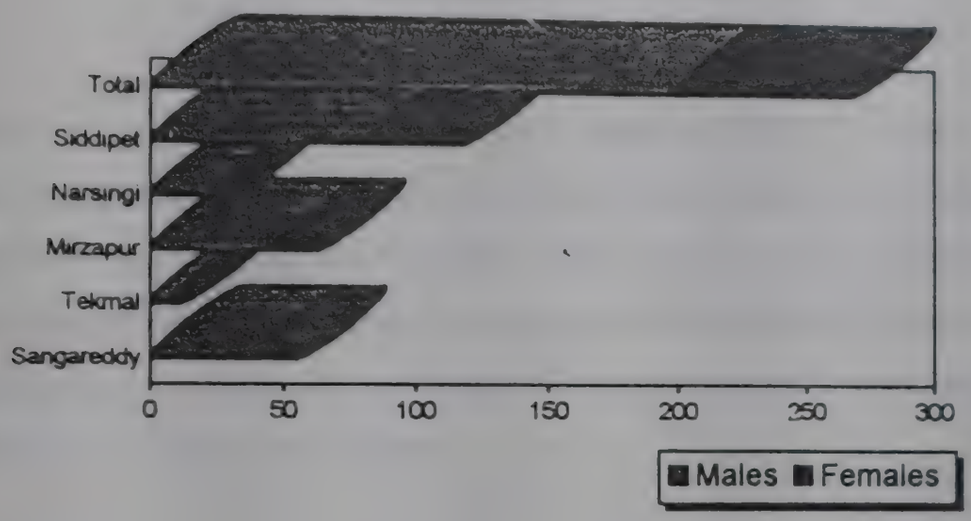
Age group (in years)	Mirzapur		Siddipet		Sangareddy		Narsingi		Tekmal	
	Cured	Defaulted	Cured	Defaulted	Cured	Defaulted	Cured	Defaulted	Cured	Defaulted
Below 40	60.0	52.4	63.5	54.7	66.1	59.3	83.4	74.6	27.8	36.4
Above 41	40.0	47.6	36.5	45.3	33.9	40.7	16.6	25.4	72.2	63.6

As many as about 25% and 40% among the defaulters in Narsingi and Sangareddy, respectively were aged above 40 years. Among the cured sample population, the ones aged above 40 years accounted for 16.6% and 33.9%, respectively in the same two divisions. Though there is no clear indication that defaulters belong to any particular age group, the tendency to default among the members of higher age groups is evident. It could be inferred from the data that the chances of defaulting among those aged less than 25 years is less than 50%, while the chances of defaulting among those aged above 55 years is almost 75%.

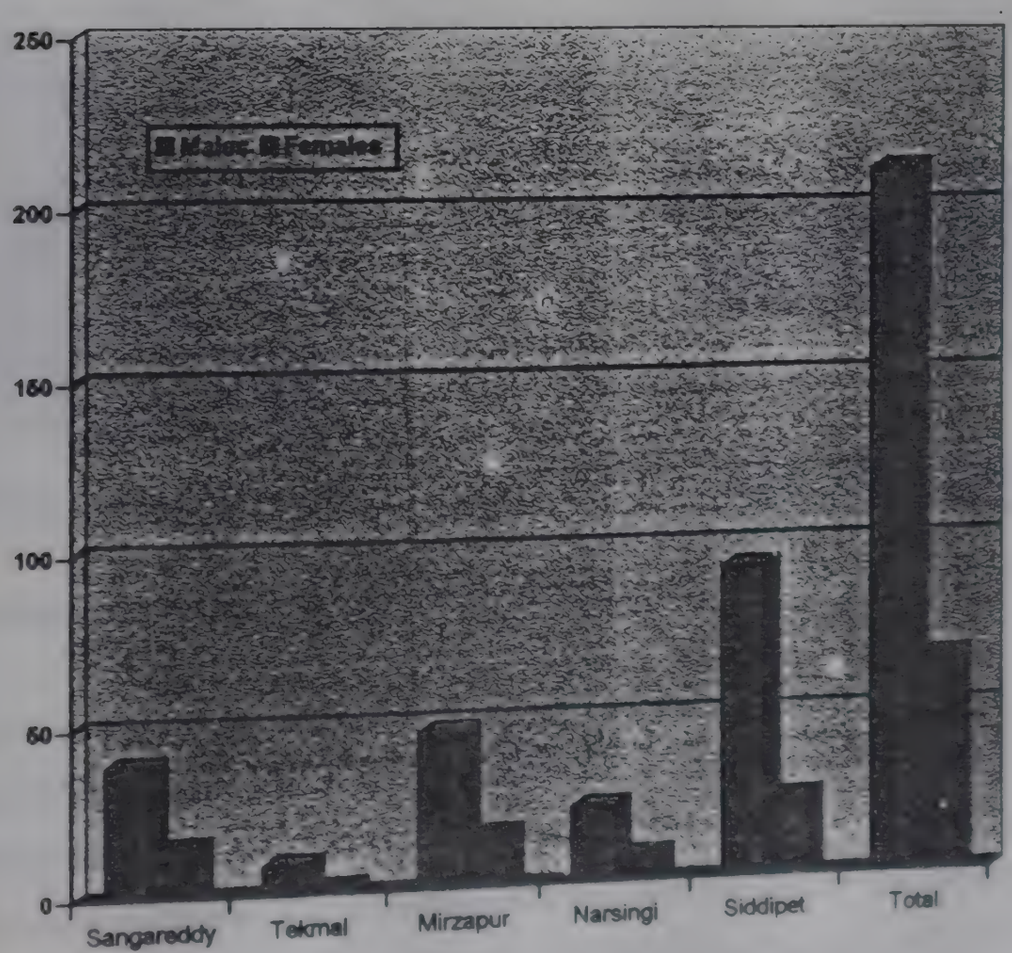
The percentage of females among the defaulters was 27.8, 18.2, 25.4, and 25.8, in Sangareddy, Tekmal, Mirzapur, and Narsingi divisions, respectively. As against this, the proportion of females among those completed treatment was, 24.5%, 11.1%, 21.7%, and 17.9%, respectively for the same divisions. Thus, the proportion of females among the total defaulters in different divisions varied between 18.2% (Tekmal) and 27.8% (Sangareddy). The proportion of female defaulters is higher by about 4% to 10%, than their proportion among the cured sample population. The proportion of females to males among the total

registered patients was approximately 1: 3.2. But the proportion of females to males among the defaulters is 1: 2.8.

Distribution by sex of cured patients



Distribution of defaulters by sex

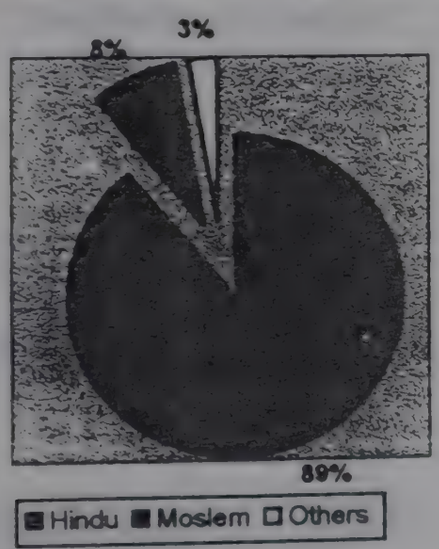


The trend in Siddipet division is different. The proportion of women in this division among the defaulters was 20.5%, as against their proportion of 29.6% among the cured patients. This suggests that more number of women in this particular division were able to complete their treatment.

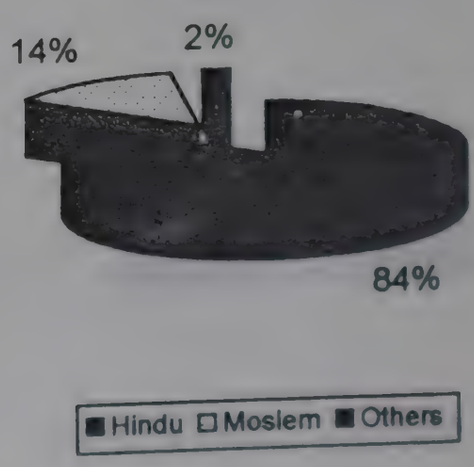
2.4 Religion

The proportion of non-Hindus among those who availed the RNTCP treatment appears to be very less. Only 75 out of the total 541 sample patients in Medak were found to be non-Hindus. Over all, the non-Hindus comprised 11.2% among the defaulters, while among the cured patients they accounted for 16.2%. Thus the data shows a slightly greater inability among the Hindu patients to complete the treatment in Public facilities. How far is this related to other issues like stigma, economic status, and preference for treatment in private sector etc. needs to be examined.

Distribution of defaulters by religion



Distribution of cured by religion



2.5 Distance to treatment centre and availability of transport

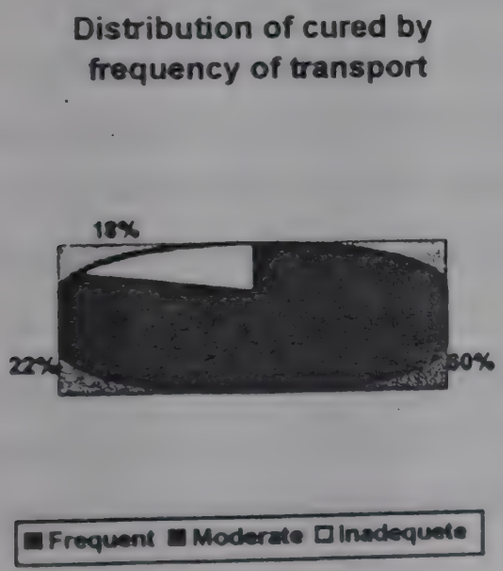
It appears that patients have not felt it difficult to cover a distance of about 10 Kms. for availing treatment. The completion of treatment was, however, effected, if the patients were to cover more than 10 Kms. Among the defaulters, 46%, 25% and 29% respectively travelled less than three Kms., 4-9 Kms. and more than 10 Kms to avail treatment. The proportion of those who travelled similar distances among the cured sample was 35.5%, 31.7% and 32.8%, respectively. Of the 13 patients who travelled more than 11 Kms to

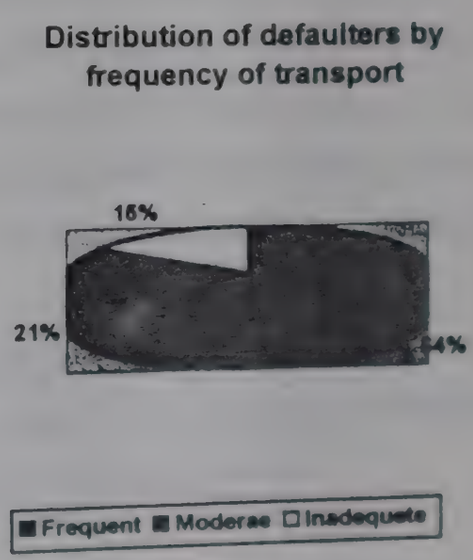
avail treatment, nine defaulted sooner or latter. It may be necessary to note that the distance factor would have influenced the prompt defaulter retrieval actions by health staff too, and so would have contributed to greater default among such patients ultimately.

TABLE 14: Distribution of cured and the defaulters by distance to treatment center in Medak district

Distance (in Kms)	Mirzapur		Siddipet		Sangareddy		Narsingi		Tekmal	
	Cured	Defaulted	Cured	Defaulted	Cured	Defaulted	Cured	Defaulted	Cured	Defaulted
Less than 3	15	19	45	46	17	23	9	18	3	1
4 – 9	13	13	50	52	18	20	6	2	2	2
10 – 21	30	26	19	19	18	10	13	12	3	6
Above 21	2	5	1	0	0	1	0	1	1	2

Non-availability of adequate transport facilities too seems to have not influenced the completion of treatment. About two thirds of patients defaulted even while having good transport facilities. On the other hand, 40% among the cured patients were stated to be having only moderate or inadequate transport facility.





2.6 Interval between diagnosis and treatment start

Data shows that those who availed treatment, by and large, started it without much delay after the diagnosis. About 80% of the patients commenced the treatment within three days of diagnosis of the disease. But it is worth noting that 15 patients out the total sample were put on the treatment only after one month after the diagnosis.

TABLE 15: Distribution of cured and the defaulters by time lag between diagnosis and treatment

Time lag (in days)	Siddipet		Sangareddy		Narsingi		Tekmal	
	Cured	Defaulted	Cured	Defaulted	Cured	Defaulted	Cured	Defaulted
Less than 3	78	83	39	31	17	20	7	10
4 - 6	15	12	8	11	6	6	2	1
Above 7	22	22	6	12	5	5	0	0

In case of Sangareddy and Siddipet divisions' slightly greater tendency to default by those who commenced the treatment a little late is also observed. The patients who delayed the treatment for more than seven days comprised 22.2% among the total defaulters as against their percentage of 11.3% among the cured sample in Sangareddy.

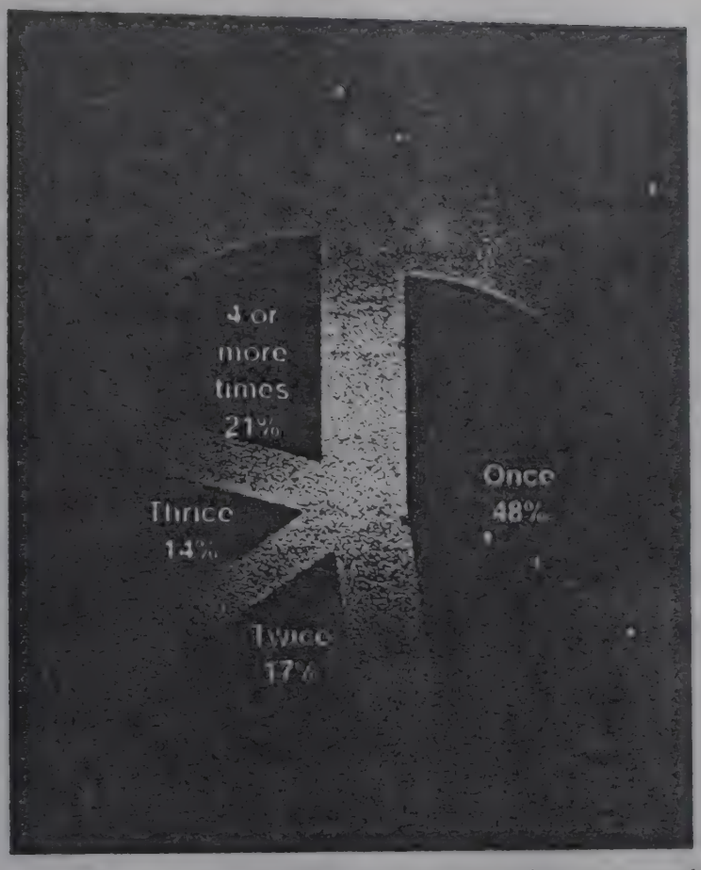
2.7 Defaulter retrieval action

Data was obtained on the time lag between last interruption of treatment and the date on which the patient has been recorded default. This data indicates the efforts of the health staff in retrieval of defaulting patients. Unfortunately the date of default has not always been mentioned on the treatment cards. In such cases, the date of default was taken to be 60 days later to the last interruption. In case of 12.7% of the defaulters, the time lag between the date of interruption and recorded date of default was less than five days. This time lag was less than one month in the case of another about one fifth of the patients. That many of the patients were declared as default so early suggests lack of repeated contacts with the patients for default retrieval.

The treatment cards did not indicate any record of default retrieval action in Medak district. Only occasionally (9 out of 117 patients), some remarks were noticed in case of patients of Siddipet division. The retrieval actions were initiated only after seven days in majority of these patients.

3.3 Treatment interruption among sample of RNTCP patients registered as completing treatment

About two thirds of the patients completed the treatment without any interruption any time. The rest one third of the patients interrupted for different duration of time and for various numbers of times. It may be that some of these patients returned for treatment and ultimately completed due to the efforts of the health staff. As no mention of action taken at the time of interruption of treatment has been recorded, it is however difficult to make any specific comment on this.



Almost half of the patients who interrupted the treatment prior to completion did so only on one occasion. While about one fifth interrupted the treatment for four or more times, those who interrupted on two and three occasions comprised 17.4% and 14.1%, respectively.

3.4 *Profile of default among patients started on daily short-course regimens (NTCP)*

In Medak, as few as 55 patients were registered in the Short Course regime during the year 1997. Only four patients amongst them completed the treatment and so default rate was as high as 93.2%. Among the defaulters here, a similar percentage (15.6%) belonged to two different age groups, v.i.z 26-30 years and 46-50 years. There were as many defaulters in the age group of less than 40 years as there were in the above 41 years age group.

All those who completed treatment in the SCC regime in Medak were constituted of only males. Unlike in Hyderabad, among the defaulters, the proportion of females was 27.5%, which shows greater tendency to default among the females in the rural areas. No specific comment on the problem of default for the different religious groups is possible as the group of defaulters in Medak belonged to by and large, Hindu religion.

The Medak data reveals that patients requiring travelling longer distances tended to default in greater numbers. Nearly one half of the patients who defaulted were stated to have travelled a distance of more than six kilometres to the place of treatment. This observation is consistent with the ones made for patients under RNTCP treatment. The distance of about 10 kilometres generally did not pose any problem for patients of rural areas. But any distance of more than kilometres influenced adversely the treatment completion. The data also reveals that many in rural areas defaulted in spite of frequent transport facility to the treatment centre from place of residence. Thus it is clear that patients tended to default more for the reasons of "longer"distances and more travel time, than for inadequate transport facility.

As many as 24 out of the total 51 patients put on SCC regime in Medak defaulted during the intensive phase. In contrast to what has been observed in urban sample, as many as a quarter of the patients in Medak defaulted immediately after the intensive phase.

4 DESCRIPTION OF PATIENTS REGISTERED AS DEFAULT IN HYDERABAD DISTRICT

4.1 Overview of patient registrations and treatment outcomes (RNTCP)

During the first three-quarters of the year 1997 and the last quarter of 1996, a total of 1742 patients were registered for RNTCP treatment in Hyderabad. The treatment out comes of patients treated under different categories of disease are as follows.

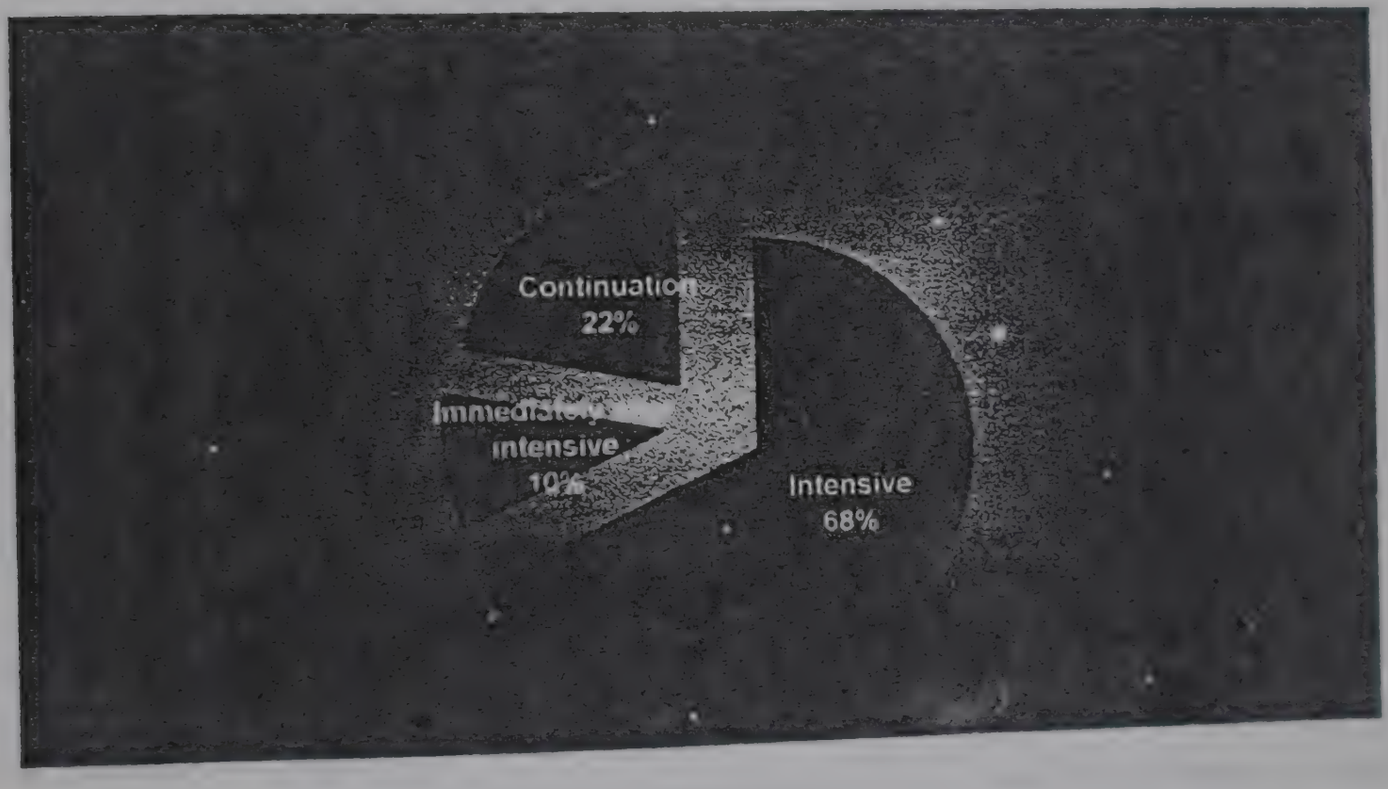
TABLE 16: RNTCP registrations and treatment outcomes (cured, treatment completed and default)

Type of Disease	Total registrations	Out comes							
		Cured	%	Treatment completed	%	Default	%	Other outcomes	%
New smear positives	585	406	69.4	18	3.0	114	19.5	47	8.1
New smear negatives	425	[redacted]		296	69.7	107	25.1	22	5.2
New extra pulmonary	356	[redacted]		287	80.6	54	15.1	15	4.3
Others	376	197	52.4	20	5.3	100	26.6	59	15.7
Total	1742	–	–	–	–	375	–	–	–

.2 *Profile of defaulters registered in Hyderabad District under RNTCP*

2.1 Time of default during course of treatment

As in the case of Medak, slightly more than two thirds of the defaulters were those who discontinued treatment during the intensive phase. The patients who defaulted immediately after the intensive phase were slightly less in Hyderabad, but still quite significant percentage (about one tenth).



The problem of initial defaulters is bit negligible in Hyderabad as only about 3% were found to have defaulted without commencement of any treatment. However, almost a quarter of the patients discontinued the treatment within seven days after the initiation of treatment. As many as about 60% of the defaulters were formed by those who consumed less than 22 doses of treatment. Thus it is clear that majority of the defaulters in public facility have not been able to receive the assurance of good treatment early on their treatment. As many of such patients might have preferred treatment from private sector, the health staff would have not felt the need for default retrieval

TABLE 17: Distribution by number of doses consumed before last interruption

Number of doses	Defaulters	
	Number	Percentage
Nil	9	2.9
1 – 3	43	14.2
4 – 6	25	8.3
7 – 9	23	7.6
10 – 12	25	8.3
13 – 15	25	8.3
16 – 18	15	5.0
19 – 21	15	5.0
22 – 24	36	11.9
25 – 27	7	2.3
28 – 30	5	1.6
31 – 33	8	2.7
34 – 36	9	3.0
Above 36	56	18.6
Total	301	100.0

4.2.2 Place of diagnosis

The preference for "higher level" health institutions for diagnosis is evident from the data. Almost half of the patients in Hyderabad were diagnosed in State T.B Center. The others by and large were diagnosed in the T.B Clinics of the areas to which they belonged. That means few patients of one division were diagnosed in T.B Clinics of another division.

TABLE 18: Distribution by place of diagnosis

Place	Cured		Defaulters	
	Number	Percentage	Number	Percentage
Within division	104	36.0	84	27.9
S.T.C	166	57.4	196	65.1
Outside division	19	6.6	21	7.0
Total	289	100.0	301	100.0

.2.3 Age and sex distribution of patients registered as default

The distribution of defaulters and the cured by age groups broadly shows trends similar to those observed in case of Medak. But, The proportion of above 41 years among the defaulters is not as much as it was observed in Medak. The men and women aged 31 to 40 years among the defaulters comprised about 23% among the defaulters, where as their percentage among the cured was about 16%. Unlike in Medak, the proportion of those aged less than 20 years is significantly higher (26%) among the cured sample as compared the percentage among the defaulters (14.2%).

TABLE 19: Distribution by age groups

Age group (in years)	Cured		Defaulters	
	Number	Percentage	Number	Percentage
Less than 20	75	25.9	43	14.3
21 – 25	55	19.0	56	18.7
26 – 30	48	16.6	55	18.2
31 – 35	21	7.4	35	11.6
36 – 40	25	8.6	34	11.3
41 – 45	14	4.8	19	6.3
46 – 50	20	6.9	21	6.9
51 – 55	9	3.1	6	2.0
56 – 60	15	5.2	19	6.3
Above 60	7	2.5	13	4.4
Total	289	100.0	301	100.0

The observations for the distribution of defaulters and cured sample by sex were almost the same in Medak and Hyderabad. However, the proportion of females both among the cured and the defaulters was considerably high (38.7% and 36.8%, respectively) in Hyderabad than in Medak. As the proportion of males and females in the total registered patients is not readily known from the records, it is difficult to make further comment on this data.

TABLE 20: Distribution by sex

Sex	Cured		Defaulters	
	Number	Percentage	Number	Percentage
Males	177	61.3	220	63.2
Females	112	38.7	81	36.8
Total	289	100.0	301	100.0

4.2.4 Religion

In contrast to what has been noticed in Medak, the proportion of Hindus among the cured sample was slightly higher (69.5%) than what it was among the defaulters (66.4%). The number of patients belonging to religions other than Moslem and Hindu being negligible, the proportion of Moslems among the defaulters was 30.5%.

TABLE 21: Distribution by religion

Religion	Cured		Defaulters	
	Number	Percentage	Number	Percentage
Hindu	**201**	**69.5**	**200**	**66.4**
Moslem	**85**	**29.4**	**92**	**30.5**
Others	**3**	**1.1**	**9**	**3.1**
Total	**289**	**100.0**	**301**	**100.0**

4.2.5 Distance to treatment centre and availability of transport

That the distance is not greatly hindering the treatment is revealed in the Hyderabad data too. The patients who lived within three kilometres distance from the treatment centres comprised 53.4% of the total defaulters. Another exactly one third of the defaulters were from the areas, which were about 4 to 6 kms. from the treatment centres. While the patients living at a distance of more than 10 kms. comprised about 5% among the cured, the proportion of such patients among the defaulters was about 8%, which means completion of treatment was effected in case of some patients, if a distance of more than 10 kms. was to be covered for treatment. All most all the patients in Hyderabad had frequent or moderate transport facility to reach the treatment centre. Similarly, the travel time to reach the treatment centre was less than one hour in the case of all the patients. We may hence infer that travel time as well as the lack of transport facilities was not of great concern for the defaulters.

TABLE 22: Distribution by distance from place of residence to treatment centre

Distance (in Kms.)	Cured		Defaulters	
	Number	Percentage	Number	Percentage
Less than 3	**152**	**52.5**	**161**	**53.4**
4 – 6	**108**	**37.3**	**100**	**33.3**
7 – 9	**14**	**4.8**	**16**	**5.3**
10 – 12	**11**	**3.8**	**15**	**5.0**
Above 12	**3**	**1.6**	**9**	**3.0**
Total	**289**	**100.0**	**301**	**100.0**

TABLE 23: Distribution by frequency of transport

Frequency	Cured		Defaulters	
	Number	Percentage	Number	Percentage
Frequent	288	99.6	293	97.3
Moderate	1	0.4	7	2.3
Inadequate	-	-	1	0.4
Total	289	100.0	301	100.0

4.2.6 Interval between diagnosis and treatment start

A slightly more than two thirds of the patients in Hyderabad too commenced the treatment within three days of diagnosis. Just for two out of every ten, all commenced the treatment within six days. Further, there were as many late starters of treatment among the cured as among the defaulters.

TABLE 24: Distribution by time lag between diagnosis and treatment

Time lag (in days)	Cured		Defaulters	
	Number	Percentage	Number	Percentage
Less than 3	201	69.6	203	67.4
4 – 6	51	17.5	56	18.6
7 – 9	14	4.9	15	5.0
10 – 12	4	1.4	8	2.7
Above 12	19	6.6	19	6.3
Total	289	100.0	301	100.0

4.2.7 Defaulter retrieval action

The records reveal comparatively satisfactory efforts by the health staff for default retrieval in Hyderabad. The action was taken at least in five days time in case of about 47% of the patients. The action was initiated at least in about 15 days in the case of about 60% of the patients. However, there were good number of cases in which the action was taken only after 30 days. That no default retrieval action was noted in the treatment cards of about one third of the patients also needs to be taken note of.

Default retrieval actions in Hyderabad were either intimation by post or home visit by the health staff. Most frequently, the first retrieval action was intimation by post card. (60%) But, the visit by health staff was also noted, particularly when the patients were residents of near by localities. The subsequent retrieval actions, in the form of home visit by health staff, were made after a gap of about 7-10 days. Most usually

not more than four subsequent retrieval actions were noted. The average number of visits to the patients was about two Compared to other Centers, the staff of the STC initiated the defaulter retrieval actions little early, in the form of intimation by post.

TABLE 25: Distribution by time interval between interruption of treatment and first default retrieval action

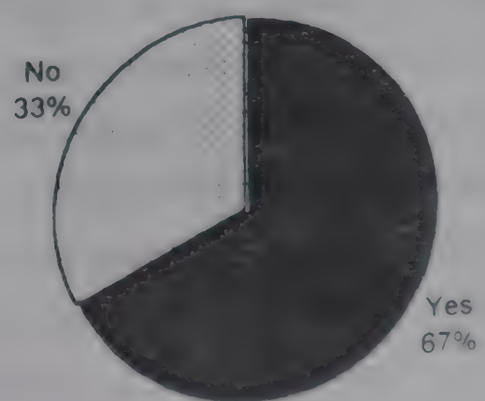
Number of days	Defaulters	
	Number	Percentage
1 – 5	141	46.9
6 – 10	27	8.9
11 – 15	11	3.7
16 – 20	5	1.7
21 – 25	1	.3
26 – 30	2	.7
Above 30	6	2.0
No action	108	35.8
Total	301	100.0

The DOTS observers in the case of about half of the defaulters were Pharmacists of the respective T.B Clinics. In the case of 21.6% of the patients the T.B Supervisors performed the functions of DOTS observer. DOTS observers were not specified in the rest of the cards (27.9%).

4.3 *Treatment interruption among sample of RNTCP patients registered as completing treatment*

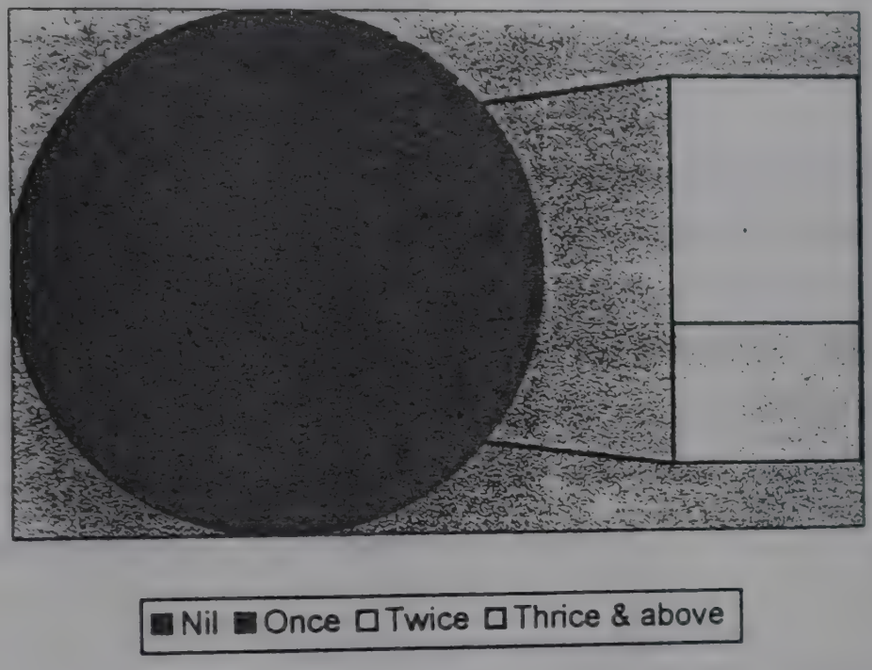
The percentage of patients who completed treatment as per the schedule is slightly less in Hyderabad. However, they still formed about two thirds of the total patients.

Distribution by completion of treatment as per schedule



It is interesting to note that a slightly more than one third of the patients in urban areas too interrupted the treatment one time or the other. Almost one in eight patients interrupted treatment for more than three times, where as a similar proportion of patients interrupted for at least two times.

Distribution by number of times treatment interrupted



4.4 *Profile of default among patients started on daily short-course and long-course regimens (NTCP)*

A total of 267 treatment cards of patients' put on NTCP regimes have been analysed to understand the default problem under the NTCP. Of these, 92 were under SCC treatment and the rest belonged to RR treatment. The default rates under the NTP in Hyderabad are quite high. Approximately only 10% of the total defaulters were reviewed. Even this 10% constituted about 40 under the SCC category and 134 under the RR category. As against these figures, the total number of patients who completed the treatment comprised only 37 under the RR category and 52 under the SCC category.

Majority of the patients registered under both the SR and SCC categories defaulted in the intensive phase. However, the proportion of those who defaulted in the intensive phase among the SR category was more by about 15% than those in the SCC. Further, similar percentages (17.9%) of the respondents were recorded as initial defaulters both in the SR and the SCC categories of the patients. As the patients were issued medicines for 15 days, the records show as if the default started only after consumption of 15 days of

treatment. The proportion of those who defaulted after consumption of 45 days of doses was comparatively more among the SCC category patients than among the SR category in Hyderabad.

TABLE 26: Distribution by time of default

Time of default	SR	SCC	Total
Intensive	94	105	199
Continuation	38	78	116
Immediately after intensive	2	7	9
Total	134	190	324

Within the urban sample, it was observed that more or less similar percentage was diagnosed at the STC and within their own respective division areas. Only rarely patients of one division area were diagnosed in another division area or in another district. Data according to the age revealed that majority of the defaulters in the Short Course (SCC) belonged to the age groups of 26-30 years. Patients of the age groups 21-25 years and 26-30 years together comprised slightly more than one third of the total defaulters. But data shows greater proportion of patients aged 41 years and above among the defaulters than those among the cured (24.6% and 29.1%, respectively). Among the cured patients of Standard regime, 21.6% belonged to the age group of 21-25 years.

TABLE 27: Distribution by age groups

Age group (in years)	SR		SCC	
	Treatment completed	Defaulted	Treatment completed	Defaulted
Less than 15	4	3	8	6
15 – 20	5	15	44	34
21 – 25	8	23	-	-
26 – 30	3	26	-	-
31 – 35	4	19	-	-
36 – 40	4	2	-	-
41 – 45	2	13	-	-
46 – 50	5	8	-	-
51 – 55	-	4		
56 – 60	1	9	-	-
Above 60	1	5	-	-
Total	37	134	52	40

Like in the rural sample, males formed majority both among the defaulters and among the patients who completed treatment under the SR therapy. But the defaulters among the males were in greater numbers as compared to females. The proportion of females among the treatment-completed category and the defaulters was 43.2% and 23.8%, respectively. The data thus suggests that more females than males tended to complete the treatment.

TABLE 28: Distribution by sex

Sex	SR		SCC	
	Treatment completed	Defaulted	Treatment completed	Defaulted
Males	**21**	**102**	**118**	**143**
Females	**16**	**32**	**76**	**47**
Total	**37**	**134**	**194**	**190**

The data shows different trends for the SR and SCC categories of treatment in the urban areas. The proportion of Moslems among those who completed treatment under the SR accounted for nearly one third of the total. As against this, almost six out of every 10 patients who completed treatment under the SCC regime were Moslems. However, the proportion of Moslems among the defaulter sample of SR and SCC categories was not quite consistent with the above observations, as they comprised 16.4% and 45.3%, respectively. Data clearly reveals that distance travelled by the patients for treatment had no bearing on completion of treatment for either the patient registered for SR or SCC category of treatment. The percentage of patients who defaulted decreased with increase in distance, though majority of the patients who completed treatment reported to be residents of areas within three-kilometre radius. Nearly two thirds of the patients among the defaulters under both the SCC and SR categories also belonged to areas with in three kilometres.

Only about a quarter of the patients both among the defaulters and treatment completed categories commenced the treatment on the same day of diagnosis. A slightly more than one third of the patients were initiated treatment within three days of treatment. The patients in whose case the initiation was delayed by more than 10 days comprised only a small proportion (5.5%).

Data on interruption of treatment by the defaulters (prior to their last interruption) and by those who completed treatment reveals that many of the patients registered in SR category and the SCC category as well did not interrupt the treatment. Such patients comprised 45.3% among those registered in SR and 51.3% among those registered in the SCC category. Among the patients of SCC category, the patients who interrupted once, twice, and more than twice comprised 10.8%, 14.9% and 28.8%, respectively. Among the patients of SR treatment, 13.5%, 8.1%, and 18.9% had one, two and more than two interruptions, respectively. The interruption of treatment for once or more times and for varying periods of time, resulted in the prolongation of treatment by more than one month in the case of 12.4% of the patients (patients who ultimately completed the treatment)

5 DEFAULT AMONG RNTCP PATIENTS SUPERVISED AT SECONDARY HOSPITALS

The cohort analysis of the patients treated in different CHCs, AHs and the RHC in Medak district revealed comparatively higher default rates and poorer cure rates. The category wise analysis for all the patients registered for treatment during the last quarter of 1996 and the first three-quarters of 1997 revealed the following default and cure rates.

TABLE 29: Cohort analysis of the patients treated in CHCs, AHs and RHC in Medak district

Category	Cured		Treatment completed		Died		Failure		Defaulted		Total
	No.	%	No.	%	No.	%	No.	%	No.	%	
Cat I	96	65.3	-	-	6	4.0	1	0.6	44	29.9	147
Cat II	29	70.6	1	2.5	1	2.5	1	2.5	9	21.9	41
Cat III	-	-	83	64.8	6	4.7	1	0.8	38	29.7	128

The data reveals that the default rates for Cat I and Cat III patients is almost double in these hospitals than the rates for the Medak district as a whole. While the default rate for the category I patients for the Medak district as a whole (for patients registered during the last quarter of 1996 and the first two quarters of 1997) was 16.8%, the default rate for the same category in the APVVP hospitals was 29.9%. Similarly, the default rates for the category III patients were 15.4% and 29.7%, respectively. The proportion of Category

II patients in the APPVVP hospitals is slightly less though the default rates among them was also quite significantly high.

6 OVERALL PICTURE OF DEFAULT IN RNTCP DEMONSTRATION DISTRICTS

The default rates of the patients registered for T.B treatment in public hospitals in the study area are quite high. However, RNTCP patients as a group both in the urban and rural areas, have less default. The achievements in case of RNTCP definitely appear to be far satisfactory, particularly when compared with NTCP. However, the fact that the patients registered under RNTCP in these two districts approximately account for only 50% needs to be born in mind. The issues relating to default under NTCP need as much attention in view of over all high default of T.B patients. The figures of default under RNTCP in urban areas and in the City of Hyderabad particularly may not be truly indicating the magnitude of the problem, as a high number of patients continued to register under the NTCP and that high default rates prevailed in NTCP. How far is the high default related to this "selection" of patients for NTCP (or in other words, how far is this comparatively better success of RNTCP related to the selection of patients for RNTCP and NTP!) needs to be examined.

The "high" default rate in RNTCP in Medak is largely because of the contribution of institutions under the APVVP. The defaulters among the patients supervised for RNTCP treatment in these few institutions comprise approximately about a quarter of the total number of defaulters. The problem of high default in the Secondary level hospitals is largely because of poor co-ordination between the field staff of the Primary Health Centres and the DOTS observers in the Secondary level hospitals, besides improper use of human resource.

The review of treatment cards indicates very poor recording practices of defaulter retrieval actions. The treatment interruptions and the duration of treatment interruptions suggest that contrary to programme norms, action on default is often taken after long delay. Defaulter retrieval action in the form of intimation by post as observed in Hyderabad would have little value in the context of RNTCP treatment.

7 RECOMMENDATIONS

7.1 *Setting guidelines for defaulter retrieval (roles, responsibilities, priorities, maximum delays)*

The role ambiguities relating to T.B programme among the staff at all levels need to be clarified at once. The present practice of holding the STS primarily responsible for defaulter retrieval particularly needs attention. As the laboratory technicians and the pharmacists fail to undertake prompt default retrieval actions in view of other priorities and also because they would not have had necessary training for undertaking the defaulter retrieval actions properly, their selection as DOTS observers should be considered only as last option. The role responsibilities of different field staff involved in the programme have to specifically defined. The training programmes need to address the issues of setting the default retrieval as top priority in the programme. As the over all cure rates/success rates in Medak district could be very significantly improved by reducing the high default rates of the patients supervised in the secondary hospitals, there is an urgent need to evolve strategies for co-ordination of work among the field staff available within the secondary hospitals (attached to P.P Units), the staff of the Sub-centres located in the towns where the hospitals are functioning and the DOTS observers in the secondary hospitals. Alternately, the Sub-centres located in the towns where the hospitals are functioning could be selected as DOTS centres rather than the hospitals.

7.2 *Improve the recording of defaulter retrieval actions*

At present there is no system of recording the defaulter retrieval action. Monitoring of the programme will be difficult unless a system is evolved. Provision may be made on the treatment cards maintained by the DOTS observers for the recording of the nature of retrieval actions initiated. There should be no scope for recording the retrieval actions 'vaguely' (like "home visit, house locked"). Submission of monthly reports on the default retrieval actions undertaken along with the details of treatment interruptions of patients currently under treatment by the DOTS observers /MPHWs should be made mandatory. Usefulness of default retrieval actions in the form of "posting card" in the context of RNTCP need to be reviewed.

7.3 *Regular audits of default*

Regular audits of default are essential to identify the shifts in the default problem. The audits help identify the groups which need special attention.

4.4. *Addressing high default rates of patients not started on DOTS regimens*

As a very large proportion of T.B patients continue to be treated under NTP, the need to address simultaneously the high default rates of such patients is evident. The selection of patients for NTP or RNTCP treatment or the preferred choices of patients with regard to RNTCP/NTP treatment would reveal the providers' perceptions of patients as also the patient perceptions of treatment regimes.

7.5 *Suggestions for further research*

The study reveals the significance of further research in the following lines

6. A prospective study of defaulters that would give greater insights on: 1) the circumstances leading to default/ carry through the treatment, 2) familial and community responses to default, 3) the specific role played by the health functionaries and DOTS observers in the default retrieval and 4) strategies that failed and those which succeeded in the default retrieval and the contexts in which the strategies have been adopted.
7. Follow up studies of defaulters of T.B treatment in Public hospitals on health seaking and illness behviour
8. Gender discriminations in health care and accessibility and acceptability of T.B treatment in Public hospitals for women
9. Potential role of Panchayat Raj institutions in the implementation and monitoring of T.B programme
6. Action research to understand the strengths and weaknesses of different models for the organisation of DOTS (through Health functionaries; Community Volunteers; NGO volunteers; Registered Medical Practitioners etc.)

Appendix 1:

Proforma used to abstract data from patient cards

1.	*T.B Number*	:	
2.	*Place of residence*	:	
3.	*Age in years*	:	
4.	*Sex*	:	*1) Male 2) Female*
5.	*Religion*	:	*1) Hindu 2) Moslem 3) Others*
6.	*Occupation*	:	*1) Service 2) Agriculture 3) Labour 4) Caste Occupation 5) Others (specify)*
7.	*Category of treatment*	:	*1) I 2) II 3) III*
8.	*Date of diagnosis*	:	
9.	*Place of diagnosis*	:	*1) within the division 2) D.T.C 3) Out side the district 4) 5) S.T.C*
10.	*Place where referred for treatment*	:	
11.	*Distance from place of residence*	:	
12.	*Travel time from place of residence*	:	*1) Less than 1 hour 2) 1-2 hours 3) 3-4 hours 4) Above 4 hours*
13.	*Availability of transport*	:	*1) Frequently 2) Moderately 3) Inadequate*
14.	*Date of commencement of treatment*	:	
15.	*Time lag between diagnosis and treatment*	:	
16.	*Whether treatment completed or not?*	:	*1) Yes 2) No*
17.	*If completed, date of completion*	:	
18.	*Was the date of completion same as expected date of treatment completion?*	:	*1) Yes 2) No*
19	*If no, number of days prolonged after the expected date of completion*	:	

If the treatment has not been completed (defaulted)

20.	*Date of default*	:	
21.	*When defaulted?*	:	*1) Intensive phase 2) Continuction phase 3) Immediately after intensive phase*
22.	*Number of doses consumed before interruption of treatment*	:	
23.	*Time lag between interruption of treatment and recorded date of default (in days)*	:	
24.	*Reasons recorded for default, if any*	:	
25.	*Who was the DOTS observer?*	:	
26.	*Number of follow up sputum examinations completed prior to interruption of treatment*	:	
27.	*Number of follow up sputum examinations should have been completed prior to interruption*	:	